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ABSTRACT

Analysis was made of financial aid to postsecondary vocational education students, using data from two primary sources, the National Postsecondary Student Aid Study (1986) and High School and Beyond (1980-84). The study found that most financial aid subsidizes students in four-year institutions. However, two-year public schools, which account for 80 percent of all vocational enrollments, received more than $1 billion in direct revenues from federal sources in 1986-87 and more than $7.6 billion in direct revenues from state and local sources. Federal vocational aid increases access to vocational education for economically and educationally disadvantaged students, handicapped students, and other target groups. Most vocational students were enrolled in relatively inexpensive schools. Most of the direct costs to aid recipients of vocational education were covered by financial aid. Students enrolled in two-year public schools were less likely than students enrolled in the other institutions to receive financial aid. Vocational students were especially dependent on federal financial aid and on loans. Receipt of financial aid appears to be related to better persistence and higher rates of completion in postsecondary vocational education. However, the study also notes that financial aid does not direct students into the technologically more advanced fields that may hold the jobs of the future; rather, that decision is left to individual student choice. (The document includes 50 tables and figures; appendices include a description of federal financial aid programs, tables showing regression analysis results, a classification of postsecondary education courses, and technical notes.) (KC)

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STUDENT FINANCIAL AID AND POSTSECONDARY VOCATIONAL EDUCATION

January 18, 1989

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EXECUTIVE SUMMARY

Student financial aid is the major source of federal funding for postsecondary vocational education. The federal financial aid system provided more than $4 billion in generally available federal financial aid to students enrolled in vocational programs and institutions in 1986-87, compared to the roughly $320 million provided annually through the Perkins Act to support postsecondary vocational education.

Most Financial Aid Goes to Four-Year Institutions

Most financial aid subsidizes students enrolled in four-year institutions. Since the four-year schools account for over half of all postsecondary enrollments, this is not surprising. However, a disproportionate amount of financial aid goes to four-year students, even after taking the distribution of enrollments into account. The four-year schools accounted for 55 percent of all enrollments in Fall 1986, but students enrolled in these schools received 73 percent of all financial aid and 67 percent of all federal financial aid. In contrast, students enrolled in the two-year, voc-tech, and proprietary schools accounted for 45 percent of all enrollments, but they received 27 percent of all financial aid and 33 percent of federal financial aid.

This does not mean, however, that the institutions which enroll vocational students do not receive any public subsidy. Two-year public schools, which account for 80 percent of all vocational enrollments, received over $1 billion in direct revenues from federal sources in 1986-87, and over $7.6 billion in direct revenues from state and local sources. Thus, postsecondary vocational education is publicly subsidized, although proportionately much more from state and local sources than from federal sources.

Federal Financial Aid Provides Access to Vocational Education

Federal vocational education policy is designed to promote access to vocational education for economically and educationally disadvantaged students, handicapped students, single parents or homemakers, adults in need of training or retraining, and students who are pursuing nontraditional occupations. The availability of financial aid generally, and of federal financial aid in particular, increases the accessibility of postsecondary vocational education for several of these groups, at least in terms of aggregate enrollments.

Most Postsecondary Vocational Education Students Enrolled in the Relatively Inexpensive Institutions

Postsecondary vocational students enrolled in two-year public and two-year private institutions, public voc-tech institutions, and proprietary institutions. Most of these students—78 percent—were enrolled in two-year public institutions, 17 percent were enrolled in proprietary institutions, 3 percent were enrolled in public voc-tech schools, and 3 percent were enrolled in two-year private institutions. This pattern of enrollment means that most vocational students were enrolled in relatively inexpensive schools. The average costs of enrollment for one year in the two-year public schools was less than $4,000 in 1986-87, and the average program cost in the public voc-tech schools was about $2,500 in 1986-87. The average cost of attendance faced by students enrolled in the private two-year and proprietary schools was between $6,000 and $7,000.

Most of the Direct Costs to Aid Recipients of Vocational Education Were Covered by Financial Aid

Postsecondary vocational students who received financial aid had a large fraction of their total costs covered, regardless of the type of institution they chose to attend. Among aid recipients, those in the public voc-tech schools had an average of 97 percent of their costs covered, while those enrolled in proprietary institutions or in the public two-year schools had about 80 percent of their costs covered by financial aid. Almost three-quarters of the costs faced by aid recipients enrolled in the two-year private schools were covered by financial aid.

Students Enrolled in the Two-Year Public Schools Were Less Likely Than Students Enrolled in the Other Institutions to Receive Financial Aid

Students in the two-year public schools were about 25 percent less likely to receive aid than proprietary students, even when costs, income, enrollment status, degree objective, and several other student characteristics were taken into consideration. There are several possible explanations for this disparity: 1) students lack of adequate financial aid counseling at these schools, and therefore do not have enough information about their financial aid options, 2) the relatively of low costs of attendance may discourage students from applying for aid, and 3) financial aid officers, concerned about high default rates at their college, may discourage students from taking out loans, even though this may be the only aid available to them.

Vocational Students Were Especially Dependent on Federal Financial Aid

Students who received any financial aid at proprietary schools in particular, and to some extent at two-year public schools, were very dependent on federal sources of financial aid; this dependence means that these students would be disproportionately affected by changes in federal aid policy. The reliance on federal aid has some important implications because of the changing composition of the federal aid pie. Grants as a proportion of the total amount of federal aid have declined while loans have proportionately increased. This means that students at two-year public and proprietary schools, primarily vocational students, are increasingly reliant on loans as the means of financing their postsecondary education.

Vocational Students Were Disproportionately Dependent on Loans

Students enrolled in the vocational and two-year public institutions were more dependent on loans than on grant aid. The opposite was true in the four-year private schools, while students in the two-year private and four-year public schools are equally dependent on loans as on grants. This problem of loan dependence is particularly serious at the proprietary schools, where students not only depend to a great extent on loans, but where they are also incurring a large loan debts because of the high costs of attending these schools.

Receipt of Financial Aid Appears to be Related to Better Persistence and Higher Rates of Completion in Postsecondary Vocational Education

Vocational students who received financial aid appear to have persisted in postsecondary education and to have completed degrees at higher rates than vocational students who did not receive financial aid. However, there is no way to distinguish the direction of causation: it is not clear whether students who receive financial aid are therefore more likely to persist, or whether students who are most likely to persist are also more likely to try and obtain financial aid.

The Financial Aid System Does Not Encourage Enrollment in Technologically Advanced Occupations

Financial aid, and particularly financial aid from federal sources, increases access to vocational education. Furthermore, financial aid to vocational education students appears to be related to better persistence and higher rates of completion in postsecondary vocational programs. However, there is a second broad goal identified in federal vocational legislation that is less clearly obtained through the financial aid system: program improvement and the maintenance of an adequately trained labor force. While financial aid does increase access to postsecondary vocational education by making available the financial resources students need to attend a postsecondary institution, the aid system does not necessarily encourage enrollment in technologically advanced occupations. The decision about where to enroll and what to study is left up to students. The aid system is occupationally neutral. Thus, the incentives offered by the financial aid system to the suppliers of vocational education to produce technologically current programs are offered through the purchase decision of the students: if students, armed with the financial aid they need to purchase modern training, demand such training, the suppliers will provide it.

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Although many have contributed to this project, the authors bear final responsibility for the accuracy and contents of this report.

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CHAPTER I

INTRODUCTION

Current federal vocational education policy has two major objectives: increasing access to vocational programs for students with special educational needs and improving the quality of vocational programs for all students to ensure the supply of well-trained and productive workers. The federal government has two general types of policy instruments available to achieve these goals. The first, which is "supply-oriented," provides direct grants to institutions, conditioned upon their meeting certain federal statutory and regulatory requirements. The Carl D. Perkins Vocational Education Act (1986) represents the main supply-oriented approach to federal vocational education policy at both the secondary and postsecondary levels. The second type of general policy instrument, which is "demand-oriented," provides grants and loans to students seeking participation in postsecondary vocational education.

Although both financial aid and direct federal funding for postsecondary vocational education are designed to make postsecondary education more accessible for students who are under represented in the postsecondary sector, the policy frameworks within which these objectives are pursued are quite different. Financial aid policy has focused on removing financial barriers to postsecondary education, but has not been designed to achieve specific enrollment objectives. It has put financial resources in the hands of the students and allowed them to choose where to go and what to study. Vocational education policy, on the other hand, has sought to influence who enrolls and what they study—specifically to increase the enrollments of specific types of students and to eliminate sex stereotyping in vocational education—through direct grants tied to achievement of these goals.

The general objectives of financial aid and vocational education policies in ensuring access to postsecondary education derive from the more specific goals of correcting past inequities in the availability of postsecondary education and ensuring equality of educational opportunity. Furthermore, increasing access to postsecondary education through financial aid and vocational education policies is also tied to meeting the nation's continuing need for skilled labor and a well educated populace.

Although financial aid and vocational education policy have similar objectives with respect to access, only vocational education policy is directly concerned with improving the quality of vocational education. Federal vocational education policy has pursued this goal by

targeting federal funds to enhance existing programs or establish new programs. In contrast, financial aid policy may enable students to obtain a better education than they otherwise could afford, but there is no specific objective to improve existing programs or to establish new ones.

The program improvement provisions contained in the federal vocational education legislation are clearly directed towards meeting the nation's future needs. The Perkins Act explicitly acknowledges the importance of up-to-date technological resources in vocational education and the national interest in supporting technologically advanced occupations by directing a portion of its funding to improving and enhancing vocational programs. The program improvement component of the Perkins Act provides seed money to encourage state and local educational agencies to invest in technologically advanced training programs, and is there to ensure not only the supply of workers, but workers trained for modern occupations.

Financial aid policies, on the other hand, are occupationally neutral. The distribution of financial aid is based on criteria that are not necessarily related to the national interest in supporting technologically advanced training—it is the students who invest the resources made available through financial aid. Many students are aware of labor market needs and will enroll in programs that provide training for occupations in which there are good job opportunities. Many of these programs—computer aided drafting, for example—are the same kinds of programs that Congress and educational researchers would choose to support with vocational program improvement funds. But this outcome is idiosyncratic, and is not related to financial aid policy *per se*. The wisdom of students' decisions about where to invest their resources depends on the availability of accurate and timely information, information not only about dropout rates and placement rates, but about likely trends in the economy. Unfortunately, postsecondary vocational education students often do not have adequate information to make appropriate investment decisions—in fact, high dropout rates and low placement rates may be one indication that students are spending scarce educational resources on programs that are not technologically current.[1]

In sum, there are no restrictions tied to student aid that address uniquely vocational concerns. Unlike direct grants to institutions, which are designed to target students with special

[1] According to a report prepared for the Office of Planning, Budgeting, and Evaluation in the U.S. Department of Education, there are serious consumer-rights and accountability problems in the proprietary postsecondary vocational education delivery system, including questionable recruiting practices, problems with circumventing financial aid restrictions, low program completion rates, high default rates, and an increasingly weakened accreditation system. Thus, students do not have adequate information to make good investment decisions. For more on this issue, see Brian Fitzgerald and Lisa Harmon, *Consumer Rights and Accountability in Postsecondary Vocational-Technical Education: An Exploratory Study*, (Washington D.C.: Pelavin Associates, Inc., February 1988), ii.

educational needs or specific educational programs, federal financial aid policy is much more diffuse, leaving largely to aid recipients the decisions about where federal monies will be spent and which programs will be favored. With respect to vocational education, federal financial aid policy is unfocused and permissive, while the Perkins Act is focused and prescriptive.

Nevertheless, student financial aid is currently the major source of federal funding for postsecondary vocational education. The federal financial aid system provided approximately $4 billion in generally available federal financial aid to students enrolled in vocational programs and institutions in 1986-87, compared to the approximately $320 million provided annually through the Perkins Act to support postsecondary vocational education. Little is known, however, about how the major federal student financial aid programs interact with postsecondary vocational education—who is getting aid, how much and what kind of aid they are getting, what kinds of resources students and institutions have at their disposal, and how aid is related to completion. Without an understanding of how financial aid interacts with postsecondary education, it is not possible to assess whether the financial aid system furthers the same goals as direct federal funding to postsecondary vocational education. The following chapters describe how student aid flows to vocational students and institutions. The rest of this chapter describes briefly the types of financial aid programs the federal government provides, the criteria used to determine who gets financial aid, and the data used for the analysis.

Federal Financial Aid Programs

Types of Programs

The federal government sponsors two basic types of financial aid programs, "portable" and "campus-based." Portable aid programs, which include the largest federal aid programs—the Pell Grant and Guaranteed Student Loan (GSL) programs—follow the student. Students eligible for these programs can use the awards at the postsecondary institution of their choice. Pell Grants are awarded directly from the federal government to the student (although an institution acts as an intermediary for administration and disbursement of the grant funds). GSLs are lender-borrower agreements between private banks and students, with the federal government guaranteeing the loans to ensure repayment for the lenders and subsidizing the interest payments on the loan for borrowers. The institution's role is limited to certifying student eligibility and acting as an intermediary for administration of the program. Portable aid is a very diffuse policy instrument. Its main effect is to increase access to postsecondary

education generally. It increases the demand for vocational education, but because it lets students decide what to study and where, portable aid has no effect on the supply.

For campus-based aid programs—the Supplemental Educational Opportunity Grant (SEOG) program, College Work-Study (CWS) program, and the Perkins Loan program (formerly the National Direct Student Loan program)—funds are distributed to institutions by formula.[2] The institutions, using criteria established by Congress, then award the funds to students.[3] The federal government could conceivably influence the supply of vocational education as well as the demand by targeting campus-based aid to (or withholding it from) vocational institutions, but this has not been an objective of the federal distribution formulas. If they were designed to favor vocational education, student demand for vocational education could be increased by the increased availability of such aid at vocational schools and possibly by decisions at the institutional level to favor aid to students who enroll in vocational programs.

The major federal financial aid programs were never intended to influence the supply of specific types of educational programs. However, federal aid policies do tend to favor certain kinds of institutions—notably four-year institutions—and therefore implicitly favor certain types of education—notably academic education. Since 1979-80, the distribution formula for campus-based aid programs has included a hold-harmless provision for institutions that were receiving this type of aid prior to that school year. Since the funding for these programs has been held relatively constant since 1980, schools that were not participating in these programs at the time (as many two-year public schools were not) continue to have only limited access to these funds. The rules for distributing campus-based aid are complex, and take into consideration the need of students attending the particular institution as well as the prior year funding levels, and as a result, there is some change in the distribution of aid from these programs over time. However, even though the base-year for the hold-harmless has been changed from 1979-80 to 1985-86, most schools who were not participating in the campus-based programs prior to 1979-80 still have only limited access to these funds.[4] Thus, federal aid policy, to the extent that it has any direct impact on the supply of education, favors

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[2] Unlike the GSL, the Perkins Loan is made by the federal government to the student through an institution, and the interest subsidy for this program is much higher. Thus, it is much more attractive to students than the GSL, which carries a higher interest burden.

[3] Detailed descriptions of these financial aid programs are presented in Appendix 1.

[4] Because of the hold-harmless provisions that are based on prior year funding, schools have an incentive to try to use all their campus-based aid each year in order to secure continuing access to their current allotment. As a result, schools that were not participating in the campus-based programs prior to 1979-80 continue to be at a disadvantage in obtaining these funds. This is shown in the data presented in this report (Table IV.12), and was also confirmed by financial aid officers in the California Community Colleges during interviews with staff from MPR Associates (November and December, 1988).

academic institutions, and the effects of federal policy on the demand for postsecondary vocational education is the result of consumption decisions by aid recipients rather than a policy decision by the federal government.

Criteria for Awarding Financial Aid

Most financial aid from federal, state, and institutional sources is based on financial need, which is determined by reference to formulas that take into account students' own financial resources and costs of attendance. Some aid is awarded on the basis of scholastic merit or other non-need criteria (i.e. sports scholarships, veteran's benefits, or social security), but the amounts are relatively small.

There are several basic criteria that students must meet to be eligible for federal Title IV financial aid.[5] Students must be enrolled in an eligible program and institution, be a U.S. citizen or eligible non-citizen, and maintain satisfactory academic progress. If they have defaulted on a student loan, they cannot obtain another loan until making appropriate arrangements to repay their defaulted loan. In addition, students must be enrolled at least half-time for the purpose of obtaining a degree or certificate to participate in the Pell Grant and Perkins Loan programs; students may qualify for a GSL or PLUS (Parent Loan for Undergraduate Students) if they are enrolled half-time, regardless of any degree objectives. Students who attend less than half-time can sometimes qualify to receive aid from the CWS and SEOG programs. Finally, students must have financial need to be eligible for financial aid.

To evaluate a student's need for financial aid, the financial aid officer first determines the resources the student has available from earnings and assets, parents (if the student is a dependent), a spouse (if the student is married), and other sources. The financial aid officer then determines how the student is able to pay by reference to formulas that take into consideration family income, assets (including savings and real estate), the number of family members in college, and a number of other factors that could affect a student's ability to pay for their education. The student's resources are then compared to the cost of attending. The specific budgets that are used to determine the cost of attending vary from from one institution to another. However, all budgets are based on generally accepted professional guidelines and take into account the same basic pieces of information. Among the factors that are used to determine the cost of attending are tuition and fees, room and board, transportation, and other

[5] Most federal financial aid is authorized by Title IV of the Higher Education Act of 1965, as amended. Title IV aid is generally need-based, although the different programs do not all use the same needs assessment criteria for determining financial aid eligibility.

miscellaneous expenses. If student's costs of attendance exceed personal or family resources and if the nonfinancial eligibility criteria are met, then the student will qualify for need-based financial aid.

Different aid programs use different budget formulas, the criteria governing eligibility for financial assistance vary somewhat from program to program, and both the budgets and the eligibility rules may change from time to time. Thus, students may qualify for certain types of financial aid and not for others, or they might qualify for aid in one year and not the next. For example, until October 16, 1986, the GSL program used a more liberal needs test than federal campus-based programs. This more liberal set of criteria allowed students from families with less than $30,000 annual income to qualify for a GSL without having to demonstrate need, whereas all other needs-tested programs required the student to go through the more elaborate demonstration process. Since that date, however, students have had to meet the more stringent requirements that apply to campus-based aid to be eligible for a GSL.

Once the amount of the student's need has been established, the financial aid officer puts together a "package" of financial aid, which may include one or more of grants, loans, and work-study. The specific package may vary from one school to another, and from student to student in a single school, but the law requires that there be some formula for packaging campus-based financial aid. The Pell Grant program has its own needs test and award criteria, and is usually one of the first components to be included in an aid package. The packaging decision reflects a lot of different factors, including the availability of grant, loan, or work-study aid, the amount of the student's need, and the willingness of the student to accept loan or work-study aid. (Students generally do not turn down grant aid.) A student's financial aid package may not meet the full amount of his or her needs, and in this case the student is said to have some unmet need. Some students who have unmet need attend a school for which they theoretically do not have adequate resources by cutting back on their living costs, working, or obtaining a greater contribution from their parents. Other students do not find a means to fill the gap between their costs and their resources and decide not to enroll.

Given the basic criteria for determining aid eligibility, one would expect to find that students at higher cost institutions and students from lower income families, other things equal, would be more likely to receive financial aid and would receive more financial aid than students at lower cost institutions or from higher income families. However, these factors, and others, interact in complex ways so that the basic award criteria are not related to who gets aid in any simple way. For example, low income students tend to enroll in lower cost institutions. As a result, some low income students receive less aid than students with higher incomes.

In addition to the objective criteria that are used for awarding financial aid, the student plays an important part in the financial aid equation. Eligibility is largely determined by formula, but a student cannot qualify for financial aid unless he or she applies for it. This may seem obvious, but applying is not simple. The aid system favors students who are knowledgeable about the financial aid system and who make their educational plans well in advance of enrollment. The application process must be started some months before school starts, and students must submit lengthy, personal documentation. The burden of providing, or even putting together, this information may dissuade some students from applying.

The importance of the financial aid officers should be emphasized. Financial aid counseling is often the best source of current information about the financial aid options that students have. However, the availability of counseling resources is highly correlated with the type of school the student plans to attend. High cost, private institutions generally have well-staffed financial aid offices because they are dependent on finding financial aid to maintain their enrollments. In contrast, community colleges often do not have the resources to provide the same level of financial aid counseling. The unequal distribution of the counseling resources means that students in certain kinds of schools are better positioned to gather information about their aid options, and are therefore in a better position to obtain financial aid.

Personal preferences are also factors. For example, some students tend to be more loan averse than are other students. Hence, some of these students do not even apply for aid if they think that a loan is all they will qualify for, others may refuse loans and request work, and still others may alter their educational consumption decisions based either on their expectations about the availability of financial aid or in response to a less than adequate aid award.

The Data

Sources

Two primary sources of data were used for this analysis: the National Postsecondary Student Aid Study (NPSAS, 1986) and High School and Beyond (HS&B, 1980-84), which provide information about the aid received by students at various types of institutions. Only undergraduate students are included in the NPSAS and HS&B data reported here, and aggregate dollar amounts of aid calculated from these sources represent only the amount of aid awarded to undergraduate students.

The NPSAS data were collected during the 1986-87 academic year for a cross-sectional sample of students who were enrolled in October of 1986. The NPSAS sample contained over 43,000 students, almost 35,000 of whom were undergraduates. The NPSAS data are the most comprehensive and current source of national financial aid information available, and because the NPSAS sample is a cross-section of all students enrolled, it includes data on older or re-entry students and on students enrolled in vocational training or re-training programs. However, while the sample of students in NPSAS is weighted to be representative of all students enrolled in Fall 1986, many students in vocational programs are enrolled in programs that do not correspond to the academic school year. For example, training programs may last ten or fifteen weeks, and then a new group of students will enter the program. As a result, although they are an accurate reflection of all students enrolled in Fall 1986, the NPSAS data substantially underestimate the annual enrollment of students in non-standard-term programs, which primarily includes students in two-year, vocational-technical, and proprietary institutions.

Two student weights have been developed for the NPSAS data set. The original weight (Student Fall Weight) was designed to inflate the NPSAS sample to reflect the national population of postsecondary students enrolled in Fall 1986. We used this weight to generate the estimates presented in this report. Although it produces a low estimate of the absolute number of students enrolled in the two-year, vocational-technical, and proprietary institutions during the 1986-87 school year, it is the only weight that can be used when comparing students with and without aid. Student Fall Weight does produce accurate enrollment and aid statistics for students enrolled in October 1986, and as long as we accept the assumption that the vocational students enrolled in the fall are typical of all vocational students, using Student Fall Weight poses no problems. The second student weight (Adjusted Fall Weight) was designed to correct for the problem of inaccurate annualized aid statistics, but the adjusted weight only applies to students who received financial aid from the Pell Grant, GSL, NDSL, SEOG, and CWS programs. Because the Adjusted Fall Weight was only created for aid recipients, there was no way to use it to estimate the fraction of students receiving aid or to estimate correctly the enrollments of students who did not receive aid from these five programs. The uses and limitations of the different weights are described in detail in Appendix 2.[6]

The High School and Beyond data set is based on a sample of students who graduated from high school in 1980. For this analysis, we included only 1980 graduates who went on to

[6] The adjusted weights were used only to calculate annualized aid amounts from federal aid programs. Since most of the NPSAS data presented in this report reflect only Fall 1986 aid patterns, the adjusted weights were not used often and are clearly identified in footnotes where they were used.

postsecondary education within four years of completing high school. The HS&B data thus describe the experiences of a single age cohort, not all postsecondary students. Since older students are disproportionately enrolled in vocational schools and two-year institutions, the HS&B data set does not provide a good description of national enrollments in vocational programs and institutions. However, unlike NPSAS, HS&B is a longitudinal data set and contains information about students' enrollments and financial aid over several years of postsecondary education. The HS&B financial aid file contains information for a sample of 7,680 students. Approximately 70 percent of the students in the financial aid sample—5,364 students—also have complete postsecondary transcripts, which are used for the analysis of degree attainment and for analyzing the relationship between receipt of financial aid and postsecondary persistence.

There are three sets of weights available for generating nationally representative estimates of postsecondary participation for the high school class of 1980. The first is the panel weight constructed for the HS&B questionnaire data, the second is the weight for the postsecondary transcript study, and the third is the weight for the HS&B postsecondary financial aid study. After reviewing these different weights, we determined that the weight included as part of the financial aid file was the appropriate one to use for this study. Again, the advantages and disadvantages of the different weights are analyzed in detail in Appendix 2.

The two data sets are quite different and can be used to develop different kinds of information. The NPSAS data are more current than the HS&B data, and provide a more complete picture of the distribution of financial aid to all students and institutions in a single year. The HS&B data, on the other hand, can be used to evaluate the total amount of aid going to students over their postsecondary careers, including total loan burdens, and to assess the persistence effects of different types of financial aid on persistence. The NPSAS data, because they only cover one year, cannot be used for these purposes.

NPSAS and HS&B data were collected from both institutions and students. In general, institution-reported data are more reliable than student-reported data, particularly with respect to financial aid amounts from multiple sources of aid, costs of attendance, and enrollment information. Among aid recipients, student-reported information was used only in cases where the student was more likely than the institution to have accurate information (for example, the student's current employment status and parents' education). However, since most financial information on students comes from financial aid applications, institutions generally do not have information about the financial arrangements of non-aided students; in such cases we relied on student reported information not only for such things as employment status and

parents' education, but also for student earnings, parents' income, student and family contributions, and number of dependents. Demographic information such as race/ethnicity, sex, and age were taken from student sources.

Most of the data in this report are drawn from NPSAS. However, data from HS&B are used to examine issues of postsecondary persistence and completion and to supplement NPSAS data on total resources available to students and on the distribution of financial aid. Although we draw comparisons between the high school graduating classes of 1980 and 1986 in their first year of postsecondary education using both data sets, it is important to recognize that the data sets are not precisely comparable in terms of the types of aid included in the federal aid category. NPSAS includes not only the major federal aid programs, but also grants from sources such as the Department of Agriculture, the Department of Defense, and the National Science Foundation, and aid from social security or the GI Bill. The federal aid category in HS&B includes only aid from the major federal aid programs.

To supplement these two main sources of data, we use information about the sources of financial support for institutions from the Higher Education General Information Survey (HEGIS). HEGIS is an annual survey of higher education institutions conducted by the National Center for Education Statistics. The survey universe in 1986 included 3,388 institutions from the United States and outlying areas. The HEGIS survey collects information on tuition and fees, enrollment, sources and amounts of revenues, and the types and amounts of expenditures in institutions of higher education.

Definition of a Vocational Student

This study focuses on the experiences of vocational students in postsecondary education, although the experiences of academic students are also considered for purposes of comparison. The following decision rules were developed in order to distinguish between vocational and academic students. All students enrolled in proprietary and public vocational-technical (voc-tech) schools were considered to be vocational students. Although many of the programs in these schools have academic components, the programs are organized around imparting a specific set of job-oriented skills to students, thus training them for a specific vocation (e.g. auto mechanic) or class of vocations (e.g. construction, business). Students enrolled in two-year schools, both public and private, could not be simply designated as vocational, since some of the students in these schools pursue academic AA degrees or are transfer students. The rules for distinguishing between academic and vocational students were not the same for NPSAS and HS&B. Students in the NPSAS sample enrolled in two-year schools were identified as

academic or vocational based on their reported majors.[7] Students enrolled in these schools who had not yet declared a major were not specified as either vocational or academic. Two-year students in the HS&B sample were classified as vocational or academic based on their actual course-taking patterns as recorded in their postsecondary transcripts: students who completed more than 50 percent of their courses in the vocational curriculum during their total time in school were classified as vocational, and students who completed more than 50 percent of their courses in the academic curriculum were classified as academic. Finally, students enrolled in four-year institutions were not differentiated as either academic or vocational. Our interest was primarily in the non-four-year schools, and although many majors at the four-year schools are vocational (such as engineering or education), these programs are qualitatively different from vocational programs at the other types of schools.

Categories of Institutions

For this analysis, postsecondary institutions were grouped into six categories: four-year private colleges and universities, four-year public colleges and universities, two-year private institutions, two-year public institutions, public vocational-technical schools, and proprietary schools. However, the rules used for categorizing the different institutions were unavoidably a little different in NPSAS and in HS&B.

In NPSAS, we used the institutional type (less-than two-year, two- to three-year, four-year not PhD, and four-year PhD granting) and the institutional control (public, private, proprietary) variables to categorize institutions. Proprietary schools, regardless of the length of the program offered, were classified as proprietary. Less-than two-year public schools were classified as vocational-technical institutions, and two- to three-year public institutions were classified as two-year public schools. Less-than two-year and two- to three-year private schools were aggregated as two-year private schools, since there were too few institutions in the less-than two-year category to produce reliable estimates. All four-year schools (except proprietary) were included in the four-year institution category, with a distinction between public and private institutions.

Institutions were first categorized in a similar manner in HS&B, but the categorization scheme was then adjusted using school names. This was a more precise, but time consuming, means for categorizing these schools, and was necessary because the original scheme misclassified a number of schools. The different mechanisms for categorizing schools had little

[7] In order to classify majors as vocational or academic we relied on a postsecondary taxonomy developed by Norton Grubb for the National Assessment of Vocational Education. This is shown in Appendix 3.

practical effect, except at the intersection between two-year public and public voc-tech schools. The NPSAS categories were distinguished solely on the basis of the length of the program offered, while the HS&B scheme also took into account descriptions of the schools. Hence, public voc-tech schools that offered a program of two years or longer were classified in NPSAS as two-year public, but as voc-tech in HS&B. Because of the differences in the classification mechanisms, direct comparisons of the proportion of students enrolled in the public voc-tech schools between HS&B and NPSAS are misleading, suggesting a decline in enrollments in this sector that is not real. The classification scheme also serves to increase the apparent enrollments in the public two-year sector in NPSAS, but the total enrollment in the voc-tech sector is so small that this increase is negligible.

CHAPTER II

WHO ENROLLS IN VOCATIONAL EDUCATION AND WHERE

Vocational students enroll in public and private two-year institutions, public voc-tech institutions, and proprietary institutions. But who are vocational students? Do they differ from academic students in any systematic ways? And how do patterns of enrollment relate to the objectives of federal vocational and financial aid policies? To address these questions, this chapter examines patterns of enrollment and interprets these patterns in relation to federal policy goals.

The NPSAS data show that vocational students are more likely to be women than men, and they are disproportionately black and Hispanic.[8] Vocational students also tend to be older and more likely than academic students to be financially independent. Vocational students are also more likely to be from lower income families than from higher income families. Finally, vocational students are somewhat more likely than academic students to be enrolled part-time. The remainder of this chapter discusses the data from which this profile was constructed.

A majority of the undergraduate students enrolled in Fall 1986—76 percent—were enrolled in public institutions. These students were evenly split between four-year (38 percent) and two-year (37 percent) institutions. Only 1 percent of all undergraduates in Fall 1986 were enrolled in public vocational-technical (voc-tech) schools. Seventeen percent of all undergraduates were enrolled in four-year private institutions, 5 percent in proprietary schools, and 1 percent in private two-year institutions (Figure II.1).[9]

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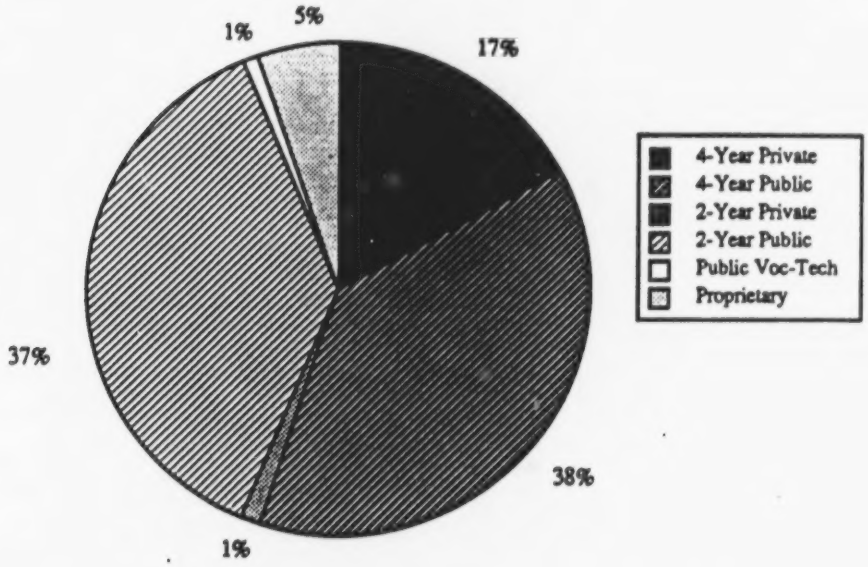
[8] Women accounted for the majority of enrollments at all institutions; however, the proportion of vocational enrollments accounted for by women was even greater than the proportion accounted for by women in the non-vocational institutions.

[9] These figures are accurate for Fall 1986, and may accurately reflect the average proportions of students enrolled in the different types of institutions at any one time during the academic year; however, these figures underestimate the proportion of students that were enrolled in proprietary, voc-tech, and public and private two-year institutions during the entire 1986-87 academic year. Students at these schools are more likely to be enrolled in short-term programs, their enrollments tend to be more volatile (two-year public schools often have open enrollment/exit policies, for example), and therefore account for a greater proportion of all students enrolled at any time during the academic year than indicated by the Fall data.

This pattern of enrollment has two implications for the financial aid statistics presented in this report. First, the averaging of short- and full-term Fall enrollments, particularly in the proprietary schools, has the effect of increasing the apparent average amount of aid received by students at these schools. This is because full-term students tend to get more financial aid than short-term students, and when only Fall enrollments are considered, the full-term students account for a larger proportion of the total enrollments at these schools than they would if all short-term enrollments were considered during the entire academic year. Second, since all short-term students who were not enrolled in the Fall term were excluded from the study, the total amount of aid going to the two-year and proprietary schools appears to be less than it would be if all students who enrolled at any time during the academic year were included.

Figure II.1
Percentage of Students Enrolled in Each Type of Institution, Fall 1986



Most of the students enrolled in public or private two-year institutions were vocational students. (Table II.1) Among students at two-year private schools in Fall 1986, 61 percent

Table II.1
Proportion of Students Enrolled in Two-Year Institutions by Type of Major Field

2-Year Private			2-Year Public		
Acad	Voc	Undecl	Acad	Voc	Undecl
13%	61%	26%	16%	51%	33%

Source: NPSAS

were enrolled in vocational programs, 13 percent were enrolled in academic programs, and 26 percent had not declared a major. Among students at two-year public institutions in Fall 1986, 51 percent were enrolled in vocational programs, 16 percent were enrolled in academic programs, and 33 percent had not declared a major. If the students enrolled in these schools who had not yet declared a major chose academic and vocational concentrations in these same proportions, then 82 percent of the students enrolled in private two-year schools and 76 percent of students enrolled in public two-year schools would have been vocational students.

Furthermore, again assuming that the students who had not declared a major at the two-year institutions were distributed in the same manner as those who had declared a major, and also assuming that all students enrolled in the four-year schools were academic students, then approximately 35 percent of all students enrolled in postsecondary institutions in Fall 1986 were pursuing some kind of vocational objective. Of these 35 percent, 80 percent were attending a two-year public school. Therefore, 28 percent all students enrolled in Fall 1986 were vocational students attending two-year public institutions.

Student Characteristics

Table II.2 shows that women accounted for 55 percent of all undergraduate enrollments in Fall 1986 and that they made up a majority of students in each type of institution as well.

Table II.2
Proportion of Students Enrolled in Each Type of Institution by Sex and Race/Ethnicity

		Type of Institution							
				2-Year Private		2-Year Public		Public	
	All Schools	4-Year Private	4-Year Public	All	Voc	All	Voc	Voc-Tech	Proprietary
Sex									
Male	45%	46%	47%	37%	33%	43%	45%	44%	35%
Female	55	54	53	63	67	57	55	56	65
Race/Ethnicity									
Native Amer.	1	*	1	8	2	1	1	1	1
Asian	5	4	5	3	2	6	5	4	3
Black	9	8	8	9	9	9	11	14	21
Hispanic	7	4	5	3	3	9	8	7	14
White	78	83	81	77	84	75	75	73	60

Columns for each characteristic may not sum to 100 percent due to rounding.
* Less than 1 percent.
Source: NPSAS

The proportion of enrollments accounted for by women, however, was not the same in each type of institution. Men and women were more evenly split at the four-year schools than in other types of schools. The enrollment disparity between men and women was most pronounced in proprietary and two-year private institutions, where over 60 percent of those enrolled were female. Furthermore, among students who had declared a vocational major at the two-year private schools, females accounted for two-thirds of enrollments. Females were also

a majority in two-year public and public voc-tech schools, although the proportions of men and women enrolled in these institutions did not differ from the proportions of men and women in all schools.

Table II.2 also shows the distribution of students at each type of institution by racial/ethnicity. Relative to the total population of undergraduates in Fall 1986, there was substantial variation in the proportions of students with different racial/ethnic characteristics enrolled in the different types of institutions. For example, Native Americans accounted for less than 1 percent of the total postsecondary population in Fall 1986, but they accounted for 8 percent of enrollments at two-year private schools. Blacks enrolled disproportionately in both proprietary and public voc-tech institutions, accounting for 21 percent and 14 percent of enrollments in these types of schools compared to only 9 percent in all types of schools. Hispanics also enrolled disproportionately in proprietary schools, accounting for 14 percent of all enrollments, compared to 7 percent in all types of schools. In contrast, whites, who accounted for almost 78 percent of the total undergraduate population overall, accounted for over 80 percent of the enrollments in four-year schools, and only 60 percent of the total enrollments in proprietary schools.

Table II.3 shows the age distribution of students enrolled in the different institutions as well as their average ages. Most of the undergraduate students enrolled in Fall 1986—60 percent—were 23 years of age or less, while 17 percent were 24 to 29 years old, and 23 percent were 30 or more. The age distribution at four-year schools, both public and private, was weighted much more heavily toward younger students than it was at other types of schools: over 70 percent of all students in these schools were 23 years or less, and the average age of students in the four-year schools was 23. Students in public two-year and voc-tech schools, on the other hand, tended to be older. Less than half of all enrollees were 23 years or less, and over a third of all students enrolled were more than 30 years of age; the average age of students enrolled in the two-year public schools was 28, and in the public voc-tech schools it was 29. The age distribution of students at proprietary and two-year private schools were between these two extremes: the average age of proprietary students was 26 and two-year private students was 24. Vocational enrollments at the two-year public schools followed the same pattern as all enrollments in those schools, but a larger fraction of vocational enrollments than of all enrollments were accounted for by older students at the two-year private schools. Since the majority of vocational students were enrolled in the public two-year schools in Fall 1986, older students made up a disproportionate share of vocational enrollments.

Table II.3
Proportion of Students Enrolled in Each Type of Institution by Age

	Type of Institution								
	All Schools	4-Year Private	4-Year Public	2-Year Private		2-Year Public		Public Voc-Tech	Proprietary
				All	Voc	All	Voc		
Up to 23	60%	74%	72%	66%	60%	44%	46%	40%	54%
24 to 29	17	12	14	14	17	21	22	22	21
30 or More	23	15	14	20	23	34	32	39	25
Average Age (years)	25	23	23	24	25	28	28	29	26

Columns for each characteristic may not sum to 100 percent due to rounding.
Source: NPSAS

Vocational students in Fall 1986 were more likely than other students to have come from lower income families. Table II.4 shows that a full 62 percent of students enrolled in public voc-tech schools and 58 percent of those enrolled in proprietary institutions came from families with less than $23,000 annual income, as did 44 percent of vocational students at two-year public and 46 percent of vocational students at two-year private schools. At four-year institutions, only about 30 percent of enrollees came from families with annual incomes of less than $23,000. At the other end of the scale, only 26 percent of students enrolled in public voc-tech and proprietary institutions came from families with annual incomes greater than $30,000, compared to over 50 percent of enrollees at the four-year institutions.[10]

Vocational students were more likely than academic students to be financially independent. Table II.4 shows that independent students accounted for more than half of all enrollments at public voc-tech and proprietary institutions, and they accounted for about half of all enrollments at the two-year public schools (and also half of vocational enrollments). In contrast, independent students accounted for only about one-quarter of all enrollments at the four-year schools, and only about a third of all enrollments at two-year private schools. However, vocational students at the two-year private schools were a little more likely to be independent than were students generally at these schools.

[10] These income figures are conservative underestimates of the disparities in the distribution of enrollments by income level, since many independent students—who generally have lower incomes than dependent students' families—did not report family income figures due to the way the data were collected.

Table II.4
Proportion of Students Enrolled in Each Type of Institution by Family Income and Dependency Status

	All Schools	Type of Institution: 4-Year Private	4-Year Public	2-Year Private: All	2-Year Private: Voc	2-Year Public: All	2-Year Public: Voc	Public Voc-Tech	Proprietary
Family Income									
Up to $11K	14%	9%	11%	20%	17%	17%	17%	31%	27%
$11K to 23K	22	18	20	27	29	25	27	31	31
$23K to 30K	14	12	14	12	14	15	13	11	14
$30K to 50K	27	28	29	24	24	26	26	20	18
$50K or More	23	33	26	18	16	17	17	6	8
Dependency Status									
Dependent	62	75	72	66	60	48	49	40	46
Independent	38	25	27	34	40	51	51	59	53

Columns for each characteristic may not sum to 100 percent due to rounding.
* Less than 1 percent.
Source: NPSAS

Vocational students were also more likely than academic students to be enrolled part-time (Table II.5). The proportion of enrollments accounted for by full-time students did not vary much by type of institution in Fall 1986, accounting for seventy percent or more of enrollments at all types of institutions except public two-year schools, where only 39 percent of students were enrolled full-time. However, since the two-year public schools accounted for almost two-fifths of all enrollments and four-fifths of vocational enrollments, one can conclude that vocational students were somewhat more likely to be enrolled part-time than students in non-vocational major programs.

These full-time/part-time patterns are confirmed when the number of credit hours for which students were enrolled are examined. The proportion of students in two-year public institutions attempting a small number of credits was much larger than in other types of institutions, and the average number of credits hours enrolled was only 9. In contrast, 12 percent of vocational students enrolled in two-year private, 26 percent of all students in proprietary, and 64 percent of all students in public voc-tech schools were enrolled for 19 or more credit hours per week; only 5 percent of all students were enrolled for this many hours. The large fraction of students in the public voc-tech schools (and in the proprietary schools as well), enrolled for this many hours reflects the type of training these students received: many

vocational programs require hours of lab or shop work in addition to classroom time.[11] Hence, students enrolled in vocational programs at these types of schools spent more time in class on average than students in the academic schools. Because such a large fraction of vocational students were enrolled in the two-year public schools, however, the majority of vocational students were enrolled for fewer than 12 credit hours per week.

Table II.5
Proportion of Students Enrolled in Each Type of Institution by Enrollment Status and Credit Hours

		Type of Institution							
				2-Year Private		2-Year Public			
	All Schools	4-Year Private	4-Year Public	All	Voc	All	Voc	Public Voc-Tech	Proprietary
Enrollment Status									
Full-Time	63	80	77	70	75	39	40	72	84
Part-Time	37	20	23	30	25	61	60	28	16
Credits Hours Enrolled									
1 to 6	26	21	13	21	16	45	41	16	5
7 to 12	27	23	27	23	24	31	33	10	20
13 to 18	42	54	57	47	48	22	23	10	49
19 +	5	3	3	9	12	3	3	64	26
Average Credit Hours Enrolled	11	12	13	11	12	9	9	18	15

Columns for each characteristic may not sum to 100 percent due to rounding.
* Less than 1 percent.
Source: NPSAS

More than two-thirds of all students enrolled in Fall 1986 worked at some time during the academic year, and over half of all students were working both in the fall and the spring terms. (Table II.6) Once again, however, there was wide variation in the fractions of students enrolled

[11] Many of the students enrolled in the voc-tech and proprietary schools were enrolled on the basis of clock hours rather than credit hours. In order to adjust for the differences in these enrollment measures, we multiplied clock hours by the average ratio of credit hours/clock hours for each type of institution. We then used this adjusted measure of clock hours to calculate average credit hours enrolled. The high proportion of students in the voc-tech schools enrolled for 19 or more hours is probably a function of the adjustment scheme. However, the number of hours enrolled does reflect the large number of hours that students in these schools must be in attendance.

Table II.6
Proportion of Students Enrolled in Each Type of Institution by Employment Status

	Type of Institution								
	All Schools	4-Year Private	4-Year Public	2-Year Private		2-Year Public		Public Voc-Tech	Proprietary
				All	Voc	All	Voc		
Working									
Fall	10%	10%	17%	13%	14%	11%	11%	9%	11%
Spring	8	8	16	9	8	6	6	12	11
Both	53	49	8	43	49	63	65	38	42
Not Wkg.	29	34	59	35	29	20	18	41	37

Columns for each characteristic may not sum to 100 percent due to rounding.

in the different types of institutions that were working and not working during the 1986-87 school year. Only 34 percent of the students enrolled in four-year private schools were not working while attending school. In contrast, 59 percent of the students enrolled in the four-year public schools did not work during the academic year. Students enrolled in the two-year public schools were more likely than students at any of the other types of schools to have been working during the academic year: almost two-thirds of all two-year public students (and a similar proportion of vocational students) worked during both the fall and spring terms. This is not really surprising, since about 60 percent of these students were enrolled part-time. Vocational students at the two-year private schools were also likely to be employed in both terms during the academic year, but students at the public voc-tech and the proprietary schools were working in smaller proportions than other vocational students. These students were more likely than students in the two-year public schools to be enrolled full-time, but not more so than the vocational students in the two-year private schools. One possible reason for their lower levels of employment is that many of these students are enrolled in concentrated, short-term programs, which limit the amount of time students have to work; the two-year private schools, in contrast, may be more likely to follow the standard academic year.

Table II.7 shows that three vocational fields accounted for half or more of vocational enrollments at all two-year, public voc-tech, and proprietary schools: business, health, and technical and engineering. There was, however, also some apparent specialization by type of institution. For example, occupational home economics at proprietary schools accounted for 15 percent of all enrollments, but not more than 5 percent of enrollments at the other types of schools. Trades and industry accounted for 33 percent of enrollments in public voc-tech schools, but only 9 percent or less at the two-year and proprietary institutions. Likewise,

education accounted for 13 percent of enrollments at the two-year public schools, 8 percent of enrollments at two-year private schools, but not more than 2 percent elsewhere. Thus, vocational students tend to enroll in one of three fields, and all types of vocational schools offer these programs; the schools also seem to specialize somewhat, as well, each finding their own niche in the educational market.

Table II.7
Proportion of Students Enrolled in Various Vocational Fields by Type of Institution

	Type of Institution			
	2-Year Private Voc	2-Year Public Voc	Public Voc-Tech	Proprietary
Bus. & Mktg.	27%	37%	21%	29%
Agriculture	*	1	1	*
Health	36	15	19	7
Occ. Home Econ.	5	3	5	15
Trades & Industry	7	9	33	7
Tech. & Engin.	17	21	9	23
Communications	*	1	1	2
Educ. & Pub. Serv.	8	13	2	1
Not Specified	-	-	10	16

* Less than 1 percent.
† Columns for each characteristic may not sum to 100 percent due to rounding.
Source: NPSAS

Table II.8
Proportion of Males and Females Enrolled in Various Vocational Fields by Type of Institution

	Type of Institution							
	2-Year Private Male	2-Year Private Female	2-Year Public Male	2-Year Public Female	Public Voc-Tech Male	Public Voc-Tech Female	Proprietary Male	Proprietary Female
Bus. & Mktg.	23%	30%	30%	44%	8%	30%	17%	33%
Agriculture	1	*	1	1	*	1	*	*
Health	13	48	5	22	6	29	1	10
Occ. Home Econ.	9	3	1	5	1	8	3	20
Trades & Industry	18	1	18	2	69	4	18	1
Tech. & Engin.	30	10	32	12	11	8	45	9
Communications	1	*	1	1	1	*	3	1
Educ. & Pub. Serv.	6	9	12	14	1	2	2	1
Not Specified	-	-	-	-	3	17	10	25

* Less than 1 percent.
† Columns for each characteristic may not sum to 100 percent due to rounding.
Source: NPSAS

Table II.8 shows that despite federal objectives in reducing sex stereotyping in vocational education, males and females seem to concentrate in fields that lead to relatively traditional patterns of employment. This is true among students enrolled in all types of vocational institutions. For example, large fractions of both males and females were majoring in business and marketing, but females were enrolled in these fields to an even greater extent than males. Females were also more likely than males to enroll in health-related occupations, occupational home economics, or to have no declared concentration. On the other hand, males were more likely than females to be enrolled in trades and industrial training programs and in technical and engineering programs. Males and females were evenly split in education and public service, communications, and agriculture programs.

Enrollment Differences: 1980 and 1986[12]

Between 1980 and 1986, the total enrollments of students entering a postsecondary institution in the fall following high school graduation declined, primarily due to declines in the size of the young adult population. However, the proportional distribution of these "immediate entrants" across types of institutions was relatively stable. Only in the proprietary sector, which experienced a 50 percent increase in its share of total enrollments, was there much change, and this change did not have any major effects on the proportion of enrollments in the other sectors because of the small fraction of enrollments accounted for by proprietary schools.

The descriptive profile of vocational students did not change much between 1980 and 1986, although there were a few notable differences. Vocational students were more likely to be female than male in both years, although they were relatively less likely to be female in 1986 than in 1980. Blacks and Hispanics showed an increased tendency to enroll in proprietary schools, and so in proportional terms were more likely to be vocational students in 1986 than in 1980; conversely, whites were proportionately less likely to be vocational students in 1986 than in 1980. The greater likelihood of vocational students being drawn from lower income families than from higher income families did not change between 1980 and 1986, however. These trends are detailed below.

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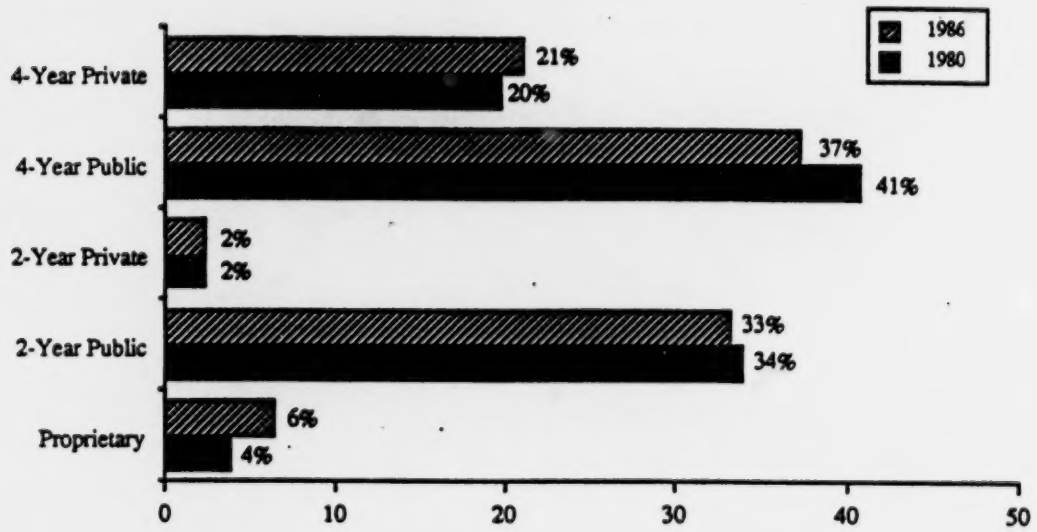
[13] This section reports statistics only on students who entered a postsecondary institution in the same year that they completed high school. Since the sample of students represented in HS&B included only those who were seniors in high school in 1980, we restricted the NPSAS sample to students who were seniors in 1986 in order to represent equivalent populations.

The percentage of total enrollments accounted for by each type of institution changed only slightly between 1980 and 1986 (Figure II.2). In both years, about one-fifth of all first-year

Figure II.2
Percentage of Enrollments in Each Type of Institution
1980 and 1986



students were enrolled in four-year private institutions and about two-fifths in four-year public institutions. Also, in both 1980 and 1986, over one-third of first-year students were enrolled in public two-year institutions, and about 2 percent were enrolled in private two-year institutions. Because of differences in the way public voc-tech schools were classified in the two data sets, we could not compare them directly over time.[13] Only in proprietary schools did the fraction of total enrollments accounted for by the sector change substantially between 1980 and 1986—their enrollments increased from slightly less than 4 percent of total enrollments to just over 6 percent. While this is a small change relative to the total population, it represents a 50 percent increase in the size of the proprietary sector share in just six years.

[13] Specifically, these schools were classified by their school codes in HS&B, which enabled us to make very precise determinations; in NPSAS public voc-tech schools were defined as those schools that were public and offered programs of less than two years in duration. Hence, there was an apparent decline in participation in the public voc-tech schools between 1980 and 1986 that is an artifact of the classification scheme. For purposes of this analysis public voc-tech institutions have been aggregated with two-year public schools to avoid creating a false impression about changes in the patterns of enrollment.

Table II.9 shows the percentage distribution of students within each type of institution by sex and by race/ethnicity. The relative proportion of males and females were about the same in

Table II.9
Proportion of Students Enrolled in Each Type of Institution in 1980 and 1986 by Sex and Race/Ethnicity[14]

		Type of Institution				
	All Schools	4-Year Private	4-Year Public	2-Year Private	2-Year Public	Proprietary
Sex						
1980						
Male	46%	49%	47%	24%	49%	24%
Female	54	51	53	76	51	76
1986						
Male	46	45	46	35	50	31
Female	54	55	54	65	50	69
Race/Ethnicity						
1980						
Native Amer.	*	1	1	1	1	1
Asian	2	2	2	0	3	1
Black	11	10	11	12	10	15
Hispanic	5	3	4	1	7	3
White	82	85	82	85	79	80
1986						
Native Amer.	1	*	*	1	1	1
Asian	4	4	5	2	4	1
Black	9	7	8	9	8	17
Hispanic	7	4	5	3	9	17
White	78	84	81	85	78	64

Columns for each characteristic may not sum to 100 percent due to rounding.
* Less than 1 percent.

1980 and 1986, except in two-year private and proprietary institutions. In these two types of schools, females declined as a proportion of total enrollment from about three-quarters to about two-thirds. In private two-year schools, the increased proportion of males reflected absolute increases in the number of males and absolute declines in the number of females entering these schools in the first year after high school. The increase in the proportion of enrollments accounted for by males in proprietary schools was achieved despite an increase in the absolute number of females enrolled in proprietary schools between 1980 and 1986. Furthermore, since

[14] The enrollment figures for 1986 differ from those presented in Table II.2 because they only include students who completed high school in 1986 and continued on to postsecondary education in that same year. Furthermore, these data may differ slightly from those presented in previous NAVE reports because the definition of a vocational student has been refined as more information about them has become available.

these two types of institutions comprise predominantly vocational enrollments, males were more likely to be vocational students in 1986 than in 1980, at least in relative terms.

Patterns of enrollment at the different institution types by race/ethnicity did not change much between 1980 and 1986, except at proprietary institutions.[15] The proportion of enrollments accounted for by Hispanics at proprietary schools increased from 3 to 17 percent, and the proportion accounted for by whites declined from 80 to 64 percent. At proprietary schools, as in other schools, the proportion of total enrollment accounted for by blacks, Asians, and Native Americans was the same in 1980 and 1986.

Table II.10 shows the distribution of students who entered postsecondary education immediately after high school by their family income. The income categories cannot be compared directly since the categories were different in the two data sets and also were not adjusted for inflation. However, the distribution of students within institution types can be compared to the distribution of all students in the same year. This comparison shows that in 1980, students from higher income families accounted for a disproportionate fraction of enrollments in four-year institutions and students from lower income families accounted for a disproportionate fraction of enrollments in two-year and proprietary institutions; this tendency was most pronounced at proprietary institutions. These same patterns persisted in 1986, although the patterns of enrollment for students at public and private two-year institutions more nearly approximated those for all students. The students enrolled at proprietary institutions were still drawn from families in the lower income groupings.

In sum, patterns of enrollment in terms of the proportion of immediate entrants enrolled in each educational segment changed only slightly between 1980 and 1986. One exception was in proprietary schools, where very modest declines in the proportions of enrollments in the other types of schools translated into a substantial increase in the proportion of total enrollments accounted for by this segment. Over the six years between 1980 and 1986, there was an increased tendency for men to enroll in the private two-year and proprietary schools. Hispanics also showed an increased tendency to enroll in proprietary schools over this period. One pattern that did not change was that students from low-income backgrounds enrolled in the two-year and proprietary schools in disproportionate numbers, while students from higher income backgrounds were more concentrated in the four-year schools.

[15] Differences of 2 to 3 percentage points were not statistically significant.

Table II.10
Proportion of Students Enrolled in Each Type of Institution in 1980 and 1986 by Family Income[16]

	All Schools	Type of Institution: 4-Year Private	4-Year Public	2-Year Private	2-Year Public	Proprietary
Family Income						
1980						
Up to $12K	14	12	12	12	16	17
$12 to $25K	46	41	42	44	50	55
$25K or More	41	48	46	34	34	27
1986						
Up to $11K	9	7	6	11	11	20
$11 to $30K	35	29	33	35	39	47
$30K or More	56	64	61	54	50	33

Columns for each characteristic may not sum to 100 percent due to rounding.
* Less than 1 percent.

Federal Policy Objectives and Vocational Enrollments

The profile of vocational students developed here suggests that federal policy objectives with respect to increasing access to vocational education are being met, at least in terms of aggregate enrollments. The Perkins Act distributes money to encourage the inclusion of specific groups of students in the vocational enterprise, including economically and educationally disadvantaged students, students with limited English proficiency, students with disabilities, adults in need of training or retraining, and students enrolled in non-traditional occupations. Although access to vocational education for students with several of these characteristics could not be assessed with the NPSAS data, the data show that postsecondary vocational education does serve economically disadvantaged students (students from lower income families) and adults in need of training or retraining (independent, older students). Although the data are not conclusive on this point, students do not appear to be enrolling in non-traditional occupations.

Given the small amount of federal funding that goes to postsecondary vocational education through the Perkins Act, one must conclude that the broad goal of increasing access to vocational education is being met without substantial direct intervention by the federal

[16] The figures for 1986 do not match those presented in Table II.4 because they only include students who completed high school in 1986 and continued on to postsecondary education in that same year.

government. The vocational enterprise, and indeed all postsecondary education, is "demand driven." Students create the demand for postsecondary education through their aggregate consumption decisions, and as the growth of the proprietary sector shows, the suppliers of postsecondary vocational education are responsive to this market. Thus, federal financial aid policy, which enables students to make their own consumption decisions, does affect the supply of vocational education, but largely through increasing aggregate demand. This strategy, while apparently effective in meeting the goal of access, at least in a broad sense, limits the federal government's ability to influence what type of vocational education is supplied.

CHAPTER III

THE COST OF VOCATIONAL EDUCATION

One of the major components in a needs analysis for financial aid is the cost associated with attending the institution in which the student is enrolled. The higher the costs of attendance, the more likely that students will have financial need and therefore be eligible for financial aid, and as costs increase, eligible students will qualify for a greater amount of aid.

How much does vocational education cost? The answer varies greatly with the type of institution. Table III.1 shows that the average cost of attending a vocational program in Fall 1986 ranged from a low of $2,501 at public voc-tech institutions to a high of $6,881 at proprietary institutions.[17] The average one-year cost of attending a four-year institution was $5,146 at a public school and over $10,000 at a private school. The average cost of attending a proprietary school, at $6,881, was second only to the average cost of attending a four-year private school.

Previous research has shown that students from low income backgrounds are more sensitive to tuition and fee charges than are students from higher income backgrounds.[18] The relatively high enrollments of low income students in the two-year public and public voc-tech schools (see Chapter II) is therefore understandable, but the high demand among low income students for vocational education at the higher cost proprietary and two-year private schools may at first glance be somewhat surprising. However, there are two factors that contribute to this pattern of enrollment: first is the availability of financial aid at these schools, which will be examined in the next chapter, and second is the total costs of obtaining a certificate or degree in the different institutions, which is discussed next.

While the total costs of attendance shown in Table III.1 accurately describe the annual or full-program costs (whichever is shorter) faced by students in the different types of schools in Fall 1986, these costs represent different proportions of the total cost of getting a degree or

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[17] Average costs were calculated using institution-reported data from the NPSAS data set. Total costs include tuition and fees, room and board, books, transportation, and miscellaneous personal items. Total costs represent the total academic year costs of attendance at institutions on the academic schedule. In institutions offering multi-year programs that are not on the academic schedule, total costs reflect the costs of one year of the program. In schools that charge on a programmatic basis or by clock hour, the total costs represent the total costs of the program incurred by the student. Living costs reflect the length of the program.

[18] Leslie and Brinkman,...

Table III.1
Average Institution-Reported Costs of Attendance by Type of Institution, Fall 1986

		Type of Institution							
				2-Year Private		2-Year Public			
	All Schools	4-Year Private	4-Year Public	All	Voc	All	Voc	Public Voc-Tech	Proprietary
Total Cost[19]	$6,437	$10,097	$5,146	$5,864	$6,148	$3,898	$4,076	$2,501	$6,881
Tuition and Fees[20]	1,743	5,230	1,322	2,501	2,714	326	356	228	3,347

Source: NPSAS

certificate in the different types of schools. Most of the proprietary programs range from six months to two-years in duration, so the cost figures represent between 50 and 100 percent of the direct cost of earning a vocational degree in a proprietary school. Likewise, the cost of attending a vocational program at public voc-tech schools, which is by definition less than two years in length, represents between 50 and 100 percent of the direct cost of earning a degree. The one-year cost of attending a two-year public or private school represents about half (or perhaps less, since many students take more than two years to complete a degree) of the total costs that students will face directly, since most programs are about two years in duration. In contrast, the costs shown for four-year schools represent about 25 percent or less of the total direct costs students will incur in the process of getting their degrees.

In addition to the direct costs of attendance, students also incur opportunity costs as a result of being unable to work full-time while in school. The longer the program, the higher the opportunity costs, so the real costs of obtaining a vocational degree compared to a four-year degree are much less in relative terms than the differences in costs shown in Table III.1 would indicate. For purposes of calculating financial aid eligibility, only the annual direct costs are

[19] The total costs shown in Table III.1 are institution-reported costs, which are based on the budgets used for calculating students' financial need. Thus, these figures reflect only the average costs incurred by students who received (or applied for) financial aid. We used institution-reported rather than student-reported costs because they were both more consistent and more accurate than student-reported costs. The size of the disparity between institution and students-reported costs depended on the student's living arrangement: students living on campus reported costs similar to those estimated by the institutions, but students living off-campus or with their parents reported room and board expenses that were significantly less than those estimated by the institution. For more on this issue, see Roslyn Korb, et al., *Undergraduate Financing of Postsecondary Education: A Report of the 1987 National Postsecondary Student Aid Study*, National Center for Education Statistics, Office of educational Research and Improvement, U.S. Department of Education, (Washington, D.C., May 1988), Table 3.2.

[20] Tuition and fees reflect full-year tuition and fee amounts; however, for schools that charge on a programmatic basis or by clock hour, tuition and fees reflect the actual amount students were charged for the program.

considered, but the real costs need to be considered in examining students' enrollment decisions. For example, one of the factors contributing to the rapid growth of the proprietary sector between 1980 and 1986 was the typically short duration of the programs. Students are concerned not only about direct costs, but also about the length of time they must be enrolled to gain the qualifications they need to find a well-paying job. Hence, even given the large disparity in costs between two-year public and proprietary schools, some students may see the proprietary institution as the better bargain because of the generally shorter period of enrollment.

There are several components to the total cost of attendance that explain the differences in total one-year costs faced by undergraduates at the different types of institutions. The most important is tuition and fees, which are shown in Table III.1 to have been much higher on average at private schools than at public schools. The lowest cost private alternative, private two-year schools, charged almost twice as much in tuition and fees as the highest cost public alternative, four-year public schools. Tuition and fees at two-year public and public voc-tech schools were very low, indicating the major direct costs of attending these schools are room and board and other miscellaneous expenses.

The large difference in the estimated costs of attendance between the two-year public and public voc-tech schools is probably related to the length of the program. The two-year public schools generally follow an academic calendar, which means that the costs reflect nine or ten months of living expenses as well as the small amount of tuition and fees. The costs of attending a voc-tech school, even though tuition and fees are similar to those charged at the two-year public schools, are about one-third less than the costs of attending a two-year public school; this difference is probably a function of a shorter program, and therefore lower living expenses.

Another factor that affects costs is the student's residence (school-owned, off-campus, or with parents). Students attending private institutions living in school-owned housing faced higher average costs than students at these schools in other living arrangements (Table III.2). In contrast, students enrolled in public institutions who lived in off-campus housing had higher average costs than students in the other living arrangements. The higher costs of living off-campus at public institutions probably reflect the fact that room and board are subsidized by the state, as is tuition at these schools. In each type of institution, living with parents was the least costly alternative.[21]

[21] The difference in total costs faced by two-year public school students living on-campus or with parents was not statistically significant.

Table III.2
Average Total Costs Incurred by Students by Type of Residence

	Type of Institution								
	All Schools	4-Year Private	4-Year Public	2-Year Private		2-Year Public		Public Voc-Tech	Proprietary
				All	Voc	All	Voc		
With Parents	$5,071	$8,747	$4,067	$5,169	$5,475	$3,171	$3,180	$1,691	$5,688
Off-campus	6,234	9,830	5,576	5,763	6,471	4,440	4,693	2,914	7,628
School Owned	7,721	10,617	5,134	6,689	6,478	3,016	3,360	Low-N	8,636

Source: NPSAS

Still another factor affecting costs is enrollment status (full- or part-time). However, most part-time students did not incur costs that were much lower than the costs incurred by full-time students in the same type of institution (Table III.3). In fact, with the exceptions of four-year private and proprietary schools, the costs incurred by part-time students were not statistically different from the costs incurred by full-time students. These results are not particularly surprising. The most significant costs faced by students enrolled in public institutions are living expenses and other costs that would be the same whether the student was enrolled full-time or part-time. In contrast, those enrolled in private institutions would save a substantial amount of money from reduced tuition and fee charges if they were enrolled less than full-time.[22]

Curiously, part-time students enrolled in proprietary schools and in vocational programs in the two-year private institutions actually incurred higher average costs than did students enrolled full-time in these schools. As would be expected, however, tuition and fees were lower for part-time students than for full-time students in all types of institutions, including vocational students in private two-year and proprietary institutions. This suggests that total costs are higher for part-time students in the proprietary schools and two-year private vocational programs because these students are attending schools in expensive locations such as highly urbanized areas.[23]

[22] The difference in costs faced by full- and part-time students at two-year private institutions is not statistically significant, in part because of the small number of students enrolled part-time.

[23] It is possible that this result reflects a sampling error, and that the particular students in the sample who were enrolled part-time just happened to be enrolled in more expensive schools. However, there were 139 cases in the proprietary part-time sample, and 1,316 cases in the proprietary full-time sample; these should be large enough subsamples to produce relatively accurate results. There were only 46 cases enrolled part-time in the two-year private vocational programs, and sampling error with this small a number could produce these odd results.

Table III.3
Average Total Costs and Average Tuition and Fees Incurred by Students by Enrollment Status

		Type of Institution							
				2-Year Private		2-Year Public			
	All Schools	4-Year Private	4-Year Public	All	Voc	All	Voc	Public Voc-Tech	Proprietary
	—Total Costs—								
Full-Time	$6,563	$10,176	$5,512	$6,004	$5,993	$3,973	$4,150	$2,564	$6,652
Part-Time	5,415	8,487	5,087	5,120	7,129	3,655	3,841	Low-N	8,385
	—Tuition and Fees—								
Full-Time	$2,449	$6,075	$1,499	$3,166	$3,189	$561	$573	$255	$3,433
Part-Time	537	1,825	714	908	1,271	193	211	111	2,894

Source: NPSAS

The costs of attendance are important determinants of the amount of financial aid awarded, since a student's need depends on both available resources and the costs incurred. For this reason, then, private school students would be expected to receive more aid than public school students. Furthermore, students at four-year private schools would be expected to receive the most aid, and public voc-tech students the least aid. Of course, costs are not the only factor affecting the distribution of aid, but the statistics in the next several chapters show that costs are important determinants of both aid eligibility and of the amount of aid eligible students receive.

CHAPTER IV

HOW VOCATIONAL EDUCATION IS FINANCED

How is postsecondary vocational education financed? Many students rely to some extent on their parents, and most students use earnings to cover at least part of the costs they incur. Financial aid is instrumental for a large fraction of postsecondary vocational students, and federal sources provide most of the aid received by students in vocational programs. The dependence of postsecondary vocational students on federal financial aid makes them very sensitive to changes in federal financial aid policies, and means that these policies have a greater impact on the supply and demand of postsecondary vocational education than on the supply of and demand for postsecondary education generally. This chapter examines the total resources available to students to purchase postsecondary vocational education from various sources, and it examines in detail the role of financial aid as a resource for postsecondary vocational students.

Total Resources Available to Postsecondary Vocational Education Students

Table IV.1 shows the total resources available to those who were enrolled in Fall 1986 for their postsecondary education. Overall, students had resources totaling more than $80 billion. The bulk of these resources were available to students in the four-year schools, reflecting both higher costs and more students. Financial aid provided almost $16 billion in resources for postsecondary students enrolled in Fall 1986, but the amount of financial aid reflected very different proportions of the available total resources in the several institutions. While financial aid contributed 20 percent of all resources available to postsecondary students in general, it accounted for about 15 percent of all resources at two- and four-year public schools, about 25 percent at two- and four-year private schools, over 30 percent at public voc-tech schools, and almost half (47 percent) of all resources available at proprietary schools. Vocational students at the two-year schools received the same proportion of their resources from financial aid as did all students in these schools.

Approximately two-thirds of all financial aid (13 percent of all resources) comes from federal sources. Federal financial aid provides 18 percent of the total resources available to students at two-year private schools, 26 percent of all student resources in voc-tech schools, and 42 percent of all student resources in proprietary schools. Federal financial aid only accounted for 10 percent of the financial resources available to students at the two-year public

Table IV.1
Average Total Resources Available to Students to Support Postsecondary Education, Fall 1986 (dollars in millions)

		Type of Institution							
				2-Year Private		2-Year Public			
	All Schools	4-Year Private	4-Year Public	All	Voc	All	Voc	Public Voc-Tech	Proprietary
Total Resources[24]	$80,070	$25,066	$35,011	$1,122	$667	$14,526	$7,801	$434	$3,913
Total Financial Aid	15,942	5,945	5,718	319	200	1,974	1,127	134	1,848
Total Federal Aid[25]	10,333	2,779	4,122	200	131	1,477	857	112	1,643
% of All Resources Contributed by All Finc'l Aid	20%	24%	16%	28%	30%	14%	14%	31%	47%
% of All Resources Contributed by Federal Aid	13	12	12	18	20	10	11	26	42
Distribution of All Aid	100%	37%	36%	2%	1%	12%	7%	1%	12%
Distribution of Federal Aid	100	27	40	2	1	14	8	1	16
Percentage of Total Students	100%	17%	38%	1%	*	37%	19%	1%	5%
Ratio of % of All Aid to % of Students	1.0	2.2	1.0	1.0	–	0.3	0.4	1.0	2.4

Rows may not sum due to rounding. The 2-year Voc. columns are subsets of the 2-year All columns.
* Less than 1 percent.

[24] Total resources include aid from federal, state, and other sources, family contributions, and student earnings. Note that family contributions include contributions from parents, relatives, and friends. Student earnings also include spouses earnings if the student was married.

[25] According to this table, the total amount of federal aid going to vocational students was $2.7 billion. This number is considerably smaller than the estimate of $4 billion presented in Chapter I. The $4 billion dollar estimate of federal financial aid to postsecondary vocational education is an annualized figure that was calculated using a set of adjusted weights that were included in the NPSAS data set for this purpose; the $2.7 billion estimate reflects only the federal aid awarded to students who were enrolled in Fall 1986, and was calculated using the standard NPSAS weight. Since the adjusted weight was constructed only for students who received federal financial aid, it could not be used to estimate the fraction of students receiving aid, or to estimate the average amount of non-federal aid received by students.

schools. The remaining resources available to students come from their own earnings (or from their spouses' earnings) and from their parents or families.

As Table IV.1 shows, over two-thirds (73 percent) of all financial aid went to four-year private and public institutions. Two-year public and proprietary schools each received about 12 percent of all financial aid. Relative to aid from all sources, federal financial aid was more concentrated in the public schools. Two-year public schools received 14 percent of all federal aid, compared to 12 percent of financial aid from all sources, and four-year public schools received 40 percent of all federal aid, compared to 36 percent of aid from all sources. Likewise, proprietary schools accounted for a larger fraction of federal aid than of all aid, 16 percent compared to 12 percent. Only four-year private schools received a smaller proportion of federal aid than of aid from all sources, 27 percent to 37 percent.

Comparisons across institutions of the ratio of the percentage of all financial aid over the percentage of all students enrolled are interesting. This ratio shows the relationship between the proportion of financial aid awarded in an institution and the proportion of students enrolled in that institution; a ratio greater than 1 indicates that the institution type had a relatively larger share of aid resources than students, while a ratio of less than 1 indicates that the institution type had a relatively larger share of students than aid resources. The overall ratio in Fall 1986 was, obviously, 1, and the ratio at four-year public, two-year private, and public voc-tech institutions was also 1. The ratio of the percentage of all aid to the percentage of students at the four-year private schools was 2.2, and 2.4 at proprietary schools. Thus financial aid was very concentrated at these schools. In contrast, the ratio at the two-year public schools was only 0.3, meaning that relatively few financial aid resources were available to students in these schools.

Average Resources Available to Aided and Non-Aided Students from Various Sources

The aggregate comparisons provide a point of departure for evaluating the impact of financial aid as a resource for supporting vocational education. However, financial aid is awarded to students, so these aggregate figures reflect both the average amount of aid received by students and the percentages of students receiving financial aid in the different types of institutions. How do individual students finance their vocational education? What proportion of costs are covered by the student and family contributions, and what proportions are covered by financial aid?

Table IV.2 shows the total amount of resources available to students to both aided and non-aided students.[26] These figures suggest that, generally, the student financial aid system helps remove financial barriers to postsecondary education. Overall, the total resources of students who received aid were higher than the total resources available to non-aided students.[27] Aided students had an average of $5,218 in total resources from parents and families, financial aid, and their own earnings. In comparison, students who did not receive aid had average total resources amounting to $4,132 from their parents and from earnings.[28]

Table IV.2
Average Total Resources of Aided and Non-Aided Postsecondary Students

	Aided	Non-Aided
Total[29]	$5,218	$4,132*
Four-Year Private	10,436	9,896
Four-Year Public	5,633	5,207*
Two-Year Private	6,198	5,904
Vocational	5,787	5,415
Academic	5,817	6,121
Two-Year Public	2,312	1,974
Vocational	2,446	2,122*
Academic	2,626	2,267
Public Voc/Tech	2,690	2,122
Proprietary	5,795	5,421

*Difference from aided students statistically significant at the .05 level using a t-test adjusted for multiple comparisons.
Source: NPSAS

[26] Unless otherwise specified, "aided students" refers to those receiving aid from any source, not just federal sources.

[27] It is important to note here that non-aided students include two groups of students: those who might have been eligible for aid but, did not apply as well as those who were not eligible for aid.

[28] One should not necessarily conclude from this comparison that students who received aid were "better off" than students who did not receive financial aid. The total resources available to a student from family or from the financial aid system reflects, in part, the costs of attendance at a particular institution. The difference in the amount of total resources available to aided versus nonaided students reflects the costs of attendance incurred, and aided students attend more costly institutions.

[29] Although accurate, these numbers are somewhat misleading since they reflect not only the average amount of aid received by students in each institution, but the distribution of aided and non-aided students across all institutions. The disparity of resources between aided and non-aided students is larger in the aggregate than any of the types of institutions because more non-aided students are in the lower-cost schools while more of the aided students are in the higher-cost schools.

Vocational students at two-year public institutions who received aid had significantly more resources than students who did not receive aid, as did aided students enrolled at public four-year colleges and universities. Similar patterns were evident among students enrolled in the public voc-tech, private four-year, and proprietary institutions, and also among academic students in the two-year public and vocational students in the private two-year schools, although these differences were not statistically significant. Only among academic students in the private two-year institutions did non-aided students have greater resources than their aided counterparts, but this difference also was not statistically significant.

The remainder of this chapter explores, in greater detail, how students finance their postsecondary education. Each source of support—parents and families, personal earnings and savings, and financial aid—is examined separately. Trends in the distribution of financial aid among types of institutions are explored for aid generally and according to the source of aid: federal, state, and institutional or other. This chapter also explores financial aid patterns according to the type of aid, grants or loans. Particular attention is given to the generally available federal aid programs.

Parental Contributions

Table IV.3 shows the fraction of all students who relied on parental contributions to meet their educational expenses. Overall, 61 percent of the students received money from their parents and families. There were large disparities among students attending different types of schools, however. Parents with children attending four-year schools were much more likely than parents of students enrolled at one- and two-year schools to have contributed. Close to three-fourths of all students at both public and private four-year schools received parental contributions. At two-year private schools, 61 percent of all students received support, as did 45 percent of those at two-year public schools, 43 percent of those at public voc-tech schools, and 52 percent of those at proprietary institutions. The smaller fractions of students in these schools receiving parental support reflects the fact that larger fractions were independent; some independent students received parental support, but the fraction was small. In two-year private institutions, vocational students were less likely than academic students to have received parental contributions—59 percent of the vocational students and 72 percent of the academic students received support. This pattern was not observed, however, among students at two-year public colleges, where similar proportions of academic and vocational students received contributions from their parents.

Table IV.3
Percentage of Students Who Received Parental Contributions to Meet Their Educational Expenses and Percentage Who Were Independent[30]

	Percent Receiving Parental Contributions	Percent Who Were Independent
Total	61%	38%
Four-Year Private	74	25
Four-Year Public	72	27
Two-Year Private	61	34
Vocational Students	59	52
Academic Students	72	42
Two-Year Public	45	51
Vocational Students	46	63
Academic Students	49	60
Public Vocational/Technical	43	59
Proprietary	52	54

Source: NPSAS

The average size of the actual contributions made by parents also varied a great deal from one type of institution to another (Table IV.4). Students at the private schools received more financial support from their parents than did students at corresponding public institutions. Among students at two-year colleges, students at private junior colleges received, on average, $4,508, while community college students received only about $2,415. Similarly, students at private four-year institutions received, on average, $7,623, while students at public four-year universities received an average of $4,192. At public vocational/technical schools, students received an average of $1,922, and at proprietary schools, an average of $3,273.

Table IV.4 shows that the average parental contribution to students who received aid was less than the average parental contribution to all students, $3,591 compared to $4,342. Since the column for all students includes those who were awarded aid, this comparison underestimates the gap between the amount of family resources available for aided and non-aided students. Two possible explanations for this difference are 1) that without financial aid,

[30] The vocational and academic categories only include those students with a declared major. Thus, the average of the proportions of vocational and academic students will not necessarily equal the proportion of all students in the two-year institutions who share the same characteristics.

Table IV.4
Average Amount of Parent Contributions Received by Students to Meet Their Educational Expenses[31]

	All Students	Aided Students
Total	$4,342	$3,591
Four-Year Private	7,623	5,784
Four-Year Public	4,192	2,968
Two-Year Private	4,508	3,461
Vocational	4,028	3,017
Academic	3,217	2,344
Two-Year Public	2,415	1,869
Vocational	2,504	1,888
Academic	2,726	2,011
Public Voc/Tech	1,922	1,576
Proprietary	3,273	2,686

the resources of aided students would have been much lower than the resources available to non-aided students, or 2) that parents of students receiving aid reduce their contributions in light of the availability of financial aid. One suspects that both of these explanations are right, and that their applicability varies from case to case.

Student Earnings

Overall, about three-fourths of all postsecondary students used their own earnings and/or their spouses' earnings to finance their postsecondary education, but the fraction of students who relied on earnings varied from one type of institution to another (Table IV.5). Students at two-year public and at four-year colleges were more likely than students at other institutions to use earnings to meet their college expenses. Approximately three-fourths of all students at four-year private, four-year public, and two-year public schools worked to help pay for their education. In contrast, 64 percent of all students at two-year private, 62 percent of all students at public vocational/technical schools, and 61 percent of all students at proprietary schools

[31] These data reflect actual parental contributions and are not necessarily indicative of the expected family contribution that is used for calculating financial aid awards.

Table IV.5
Percentage of Students Who Used Earnings to Meet Their Educational Expenses and the Average Amount Contributed From Earnings[32]

	Percent with Earnings	Average Amount
Total	76%	$1,290
Four-Year Private	76	1,807
Four-Year Public	78	1,506
Two-Year Private	64	1,417
Vocational Students	69	1,252
Academic Students	61	1,519
Two-Year Public	76	809
Vocational Students	75	857
Academic Students	78	837
Public Vocational/Technical	62	1,052
Proprietary	61	1,543

Source: NPSAS

worked to meet their educational expenses. The percentages of students who relied on earnings to help finance their postsecondary education are all somewhat higher than the fractions of students who were working during the academic year, but the earnings numbers reflect earnings from summer or other previous periods of employment.

Table IV.5 also shows that similar proportions of academic and vocational students within each of the two-year colleges worked to help pay educational expenses. At private two-year institutions, 69 percent of the vocational students and 61 percent of the academic students relied on their earnings. At public two-year institutions, 75 percent of the vocational students worked compared to 78 percent of the academic students.

The average amount of earnings students committed to paying their college expenses, to some extent, reflects the cost of schooling. Students at private four-year colleges, where average costs are higher, contributed just over $1,800. This was significantly more than the mean earnings for students at all other types of institutions. Additionally, at other private institutions, the amount of earnings set aside were higher than at comparable public schools.

[32] The average amount of earnings shown are not the expected student contribution from financial aid office budgets, which would reflect only expected contributions for aided students, but reflect actual contributions by students toward their education whether they received aid or not.

Earnings set aside for education averaged about $1,500 at proprietary institutions and $1,400 at private two-year colleges. Among public institutions, students at four-year schools contributed significantly more to their education than those at one- or two-year schools. Students at public universities and four-year colleges contributed, on average, $1,506. At community colleges and public vocational/technical schools, where the cost of attendance is relatively low, student contributions from earnings were also significant lower than contributions made by other students. Students at public two-year schools contributed about $800, while those at vocational technical schools contributed, on average, $1,052.

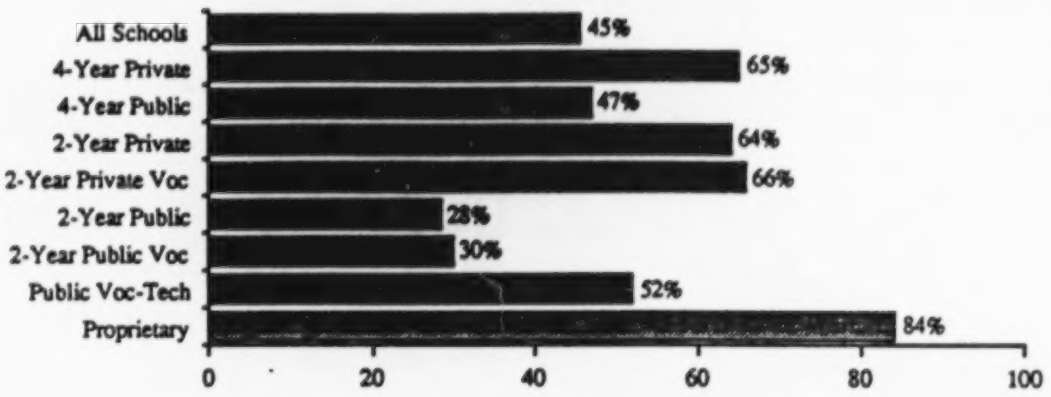
Distribution of Financial Aid to Students

In addition to parental contributions and their own earnings, students relied on financial aid to finance their postsecondary education. Since financial aid is one of the major sources of support for postsecondary vocational education, this section explores the distribution of financial aid to students in the different types of institutions in some detail. The distribution of financial aid to different types of students within institutional types will be examined in Chapter V.

Students enrolled in high cost schools in Fall 1986 were more likely to receive financial aid than students attending lower cost schools (Figure IV.1). Almost half of all students enrolled in Fall 1986—45 percent—received some financial aid. The fraction of students receiving aid, however, varied greatly by type of institution: 84 percent of students enrolled in proprietary institutions, almost two-thirds of those enrolled in four-year and two-year private institutions, 52 percent of the students in public voc-tech schools, 47 percent of four-year public school students, and only 28 percent of students in two-year public schools received aid. Thus, students at the highest cost schools—private and proprietary—were substantially more likely than students at lower cost schools to receive financial aid.

However, the proportion of students who received aid varied by the type of institution for reasons other than cost. Which factors, then, were associated with the receipt of financial aid? In order to sort out the conflicting tendencies within the financial aid system, we used multiple regression techniques to isolate the independent relationships between individual students

Figure IV.1
Percentage of Students Receiving Financial Aid in Each Type of Institution



characteristics and the probability of receiving financial aid.[33] Table IV.6 shows the parameter estimates and the mean values of each variable in the linear probability model that estimates the likelihood of receiving aid.[34]

The regression shows that several student characteristics were associated with the probability of receiving financial aid, other things equal. The student's sex was not related to the probability of receiving financial aid, but both race/ethnicity and age were associated with different probabilities of receiving aid. Older students were less likely to receive aid than younger students—for each additional year of age, the likelihood of getting aid declined by six-tenths of one percent. Whites, Hispanics and Native Americans were equally likely to receive aid, but blacks were almost 11 percent more likely and Asians 6 percent less likely to get aid than were members of these groups. Among the most powerful explanatory variables were the income variables: for each $1,000 of income earned by students, the probability of receiving aid declined by about 4 percent; likewise, higher parental incomes were related to lower probabilities of receiving financial aid.[35] Dependent students were almost 27 percent less likely

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[33] Multiple regression is technique for evaluating the impact of a series of independent variables (cause) on the dependent variable (effect). In this case the dependent variable is the probability of receiving financial aid. Regression techniques enable researchers to isolate the relative contribution of specific characteristics in explaining the observed outcome, as well as to assess the overall impact of all of the independent variables together on the observed outcome.

[34] This model was specified

[35] Student income was coded in the data as a continuous variable, which makes interpretation of the results easier. Parent income had to be included in the regression as a series of dummy variables because it was coded in the data as a categorical variable, so specifying the precise probabilities related to increases in income is more difficult.

Table IV.6
Regression Results Showing the Probability of Receiving Financial Aid from Any Source

Variable Name[36]	Parameter Estimate	Standard Error	t-value	Mean
Any Aid	(Dependent Variable)	-	-	0.46
Age	-.006	.0004	-13.55	25.02
Male	-.007	.0049	-1.46	0.45
(Female)	-	-	-	-
Native American	-.002	.0271	-0.07	0.01
Asian	-.061	.0145	-4.25	0.05
Black	.107	.0124	8.69	0.09
White	-.005	.0100	-0.47	0.78
(Hispanic)	-	-	-	-
Lives With Family	-.112	.0079	-14.30	0.30
Lives Off Campus	-.077	.0080	-9.62	0.49
(Lives in Campus-Owned)	-	-	-	-
Dependent	-.265	.0135	-19.61	0.63
(Independent)	-	-	-	-
Public 4-Year	-.119	.0094	-12.58	0.39
Private 2-Year	-.044	.0028	-1.91	0.01
Public 2-Year	-.236	.0112	-21.01	0.36
Public Voc-Tech	-.179	.0292	-6.13	0.01
Proprietary	.030	.0151	1.98	0.05
(Private 4-Year)	-	-	-	-
Hours Enrolled	.017	.0006	29.93	11.39
Tuition and Fees	.00002	.000002	11.70	$1,757.63
Student Income	-.000004	.0000002	-20.35	$10,251.14
Parent Income <$11K	.383	.0101	37.98	0.10
Parent Income $11K - $17K	.349	.0105	33.34	0.08
Parent Income $17K - $23K	.303	.0101	30.13	0.09
Parent Income $23K - $30K	.245	.0095	25.85	0.10
Parent Income $30K - $50K	.175	.0078	22.49	0.21
(Parent Income $50K+)	-	-	-	-
Parent Income, Missing	.170	.0081	20.97	0.23
Certificate	-.044	.0108	-4.10	0.08
BA/BS	-.047	.0082	-5.75	0.55
No Formal Degree	-.115	.0120	-9.62	0.05
Other	-.083	.0099	-8.43	0.09
(AA Degree)	-	-	-	-
Num. Dependents = 1	-.017	.0179	3.21	0.02
Num. Dependents = 2	.020	.0181	-0.98	0.02
Num. Dependents = 3 - 4	.039	.0166	1.08	0.02
Num. Dependents = 5 - 9	.105	.0332	2.34	0.01
Num. Dependents = Missing	.044	.0137	3.20	0.64
(Num. Dependents = 0)	-	-	-	-
Intercept	.613	.0237	25.85	1.00

* Excluded categories shown in parentheses.
Source: NPSAS

[36] Variable categories that were excluded from the regression are shown in parentheses. In order to incorporate qualitative variables into a regression framework, one of the categories must be excluded. Thus for a variable with n discrete categories, there will be n-1 categories in the regression. The coefficients, or parameter estimates, for the included categories are calculated in relation to the excluded category. The categories shown in parentheses were the excluded categories and therefore were not directly estimated: the parameter estimate for these categories is incorporated in the intercept, and the parameter estimate for the included categories represent the effect of that characteristic in relation to what was already calculated in the intercept.

than independent students to receive financial aid when other characteristics were the same, probably because they were less driven to apply for financial aid. Students with one dependent were also less likely than students without dependents to receive financial aid, but those with five or more dependents were somewhat more likely than students without dependents to get financial aid.

The costs incurred by students were positively related to the receipt of financial aid: as costs increased, so did the likelihood of getting aid. For each increase of $1,000 in tuition and fees, the probability of receiving aid increased by about 1 percent. Similarly, students who lived in campus-owned housing were more likely to receive aid than students living off campus or with their parents, probably because students living in campus-owned housing faced higher average costs than students in other living arrangements.

Academic considerations also affected the likelihood of receiving aid, as did the type of institution in which the student was enrolled. Students with no formal degree objective were almost 12 percent less likely to receive aid than students whose degree objective was an academic or vocational Associate of Arts (AA) degree, and students who were working towards a vocational certificate or a Bachelor's degree were about 5 percent less likely than AA students to receive financial aid. The number of credit hours for which students were enrolled were positively related to receipt of aid, and for each additional credit hour attempted, students were almost 2 percent more likely to receive financial aid.

The regression also shows that students enrolled in private and proprietary institutions were most likely to receive financial aid; four-year public school students were 12 percent less likely than private school students to receive aid, public voc-tech students were 18 percent less likely to receive aid, and two-year public school students were 24 percent less likely than private school students to receive aid. This is an important finding. Because the regression controlled for cost and income, it means that lower costs and incomes cannot be the only reasons why students at two-year public and public voc-tech schools are less likely to have received financial aid.

Why would students who enroll in public schools generally, and in public two-year and voc-tech schools in particular, be less likely to receive aid even when income and costs are controlled? One possibility is that because these types of institutions are relatively inexpensive to attend, students are able to adjust their budgets to finance the costs without aid, particularly if they live with their parents. There are other possibilities as well, however.

One is that these students are not as well informed about the availability of aid as are students in other types of institutions. It is possible that the kinds of students enrolled in public two-year and voc-tech schools—older, poorer, independent, and part-time—are not as well informed about their financial aid options, perhaps because they are not entering a postsecondary school right out of high school or because they do not know which questions to ask about the availability of aid. A related possible explanation is that the financial aid offices at these schools may be less aggressive in obtaining aid or less well-staffed than the aid offices in private institutions, thus limiting the total amount of financial aid available at the school or restricting the availability of financial aid counseling. Conversely, counseling may contribute to the difference: several financial aid officers in the California Community Colleges said that they discourage two-year college students—who tend to come from low-income backgrounds and whose earnings potentials are relatively modest unless they continue their education beyond a two-year program—from assuming loans because default rates are high among their students.

Yet another reason that students at the public two-year and voc-tech schools are less likely to receive aid is that these schools do not have endowments and scholarship funds, sources of aid that are more common in the four-year schools. Finally, the formulas for distributing campus-based aid, which are based on the school's history of participation in these programs and on the need of the students enrolled, may limit the availability of these funds at the public two-year and voc-tech schools.

Average Amount of Aid Received by Students Enrolled in Different Types of Institutions

The amount of aid students received was associated with the type of institution they were attending. Not only were students enrolled in more expensive institutions more likely to get aid in the first place, they were also likely to get more aid. Table IV.7 shows the average amount

Table IV.7
Average Total Aid Received by Students Enrolled in the Different Types of Institutions

	Type of Institution								
				2-Year Private		2-Year Public			
	All Schools	4-Year Private	4-Year Public	All	Voc	All	Voc	Public Voc-Tech	Proprietary
Average Total Aid	$3,150	$4,897	$2,859	$3,321	$3,279	$1,676	$1,753	$2,008	$3,659

of aid received from all sources by students in each type of institution in Fall 1986. These averages only include those students who received aid.[37] Table IV.7 shows that aid recipients received an average of $3,150 from all sources. This figure, however, hides the tremendous variation in the amount of aid received on average by students in the different types of schools. Aided students in four-year private schools received an average of $4,897, those in proprietary schools received an average of $3,659, and those in two-year private schools an average of $3,321. Students in public schools received substantially less total aid on average than private school students: those enrolled in four-year institutions received an average of $2,859, those in voc-tech schools an average of $2,008, and those in two-year public schools an average of only $1,676. Vocational students at the two-year schools received approximately the same amount of aid as all students in these schools.

In general, the amount of aid varied with costs. Students enrolled in more expensive institutions received more financial aid on average than did students enrolled in less costly schools. The only exception was that the average costs of attending a voc-tech school were less than those of attending a two-year public institution ($2,501 versus $3,898), but students at these different schools received approximately the same amount of aid (the difference shown in Table IV.7 is not statistically significant).

Distribution of Federal Financial Aid to Students in Different Types of Institutions

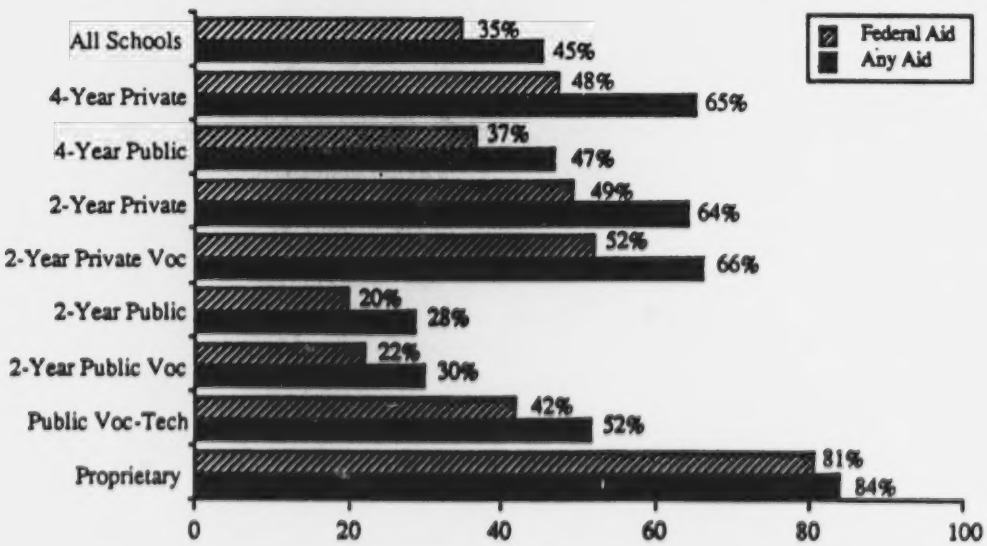
Figure IV.2 shows the percentage of students in each institution type receiving aid from any source in comparison to those who have federal aid as a component of their aid package. This figure shows that the distribution of federal aid to students in the different institution types followed patterns similar to those for aid from all sources, which is not surprising given that federal sources accounted for about two-thirds of all student aid.

While the patterns in the receipt of aid from any source and from federal sources were similar among the different types of institutions, Figure IV.2 shows that the proportion of aid recipients receiving aid from federal sources was not the same in each type of institution. For example, the difference between the percentage of students receiving any aid and those

[37] The sum of average amount of aid received plus the average amount of parental contributions plus the average amount of earnings will not equal the the total average resources available to aided students. This is because the averages reflect only those students with the specified resource, and not all aided students have all of these resources. Therefore the sum of these average will exceed the average total resources aided students have available. A discussion of the average amount of each resource available across the population of aided students is presented below.

receiving federal aid was over fifteen percentage points at two- and four-year private institutions, approximately 10 percentage points at four-year public and public voc-tech institutions, eight percentage points at two-year public schools, and only 3 percentage points at proprietary schools. These relationships suggest that students who received any financial aid at proprietary schools in particular, and to some extent at two-year public schools, were very dependent on federal sources of financial aid; this dependence means that these students would be disproportionately affected by changes in federal aid policy.

Figure IV.2
Percentage of Students Receiving Financial Aid from all Sources and from Federal Sources



The reliance on federal aid has some important implications because of the changing composition of the federal aid pie. Grants as a proportion of the total amount of federal aid have declined while loans have proportionately increased. This could mean that students at two-year public and proprietary schools, primarily vocational students, are increasingly reliant on loans as the means to finance their postsecondary education. This could produce different effects, depending on the nature of the student. On one hand, students could become increasingly reliant on loans, as appears to be the case at proprietary schools; on the other hand, they could choose not to participate in the aid system due to an aversion to debt, as appears to be the case at two-year public institutions. These situations could lead to higher default rates among those who borrow and lower participation rates among those who do not.

Average Amount of Federal Aid Received by Students Enrolled in Different Types of Institutions

Table IV.8 shows the average amount of federal aid received by students enrolled in the different types of institutions (exclusive of all other aid they might have received from other sources) in comparison to the total amount of aid received from all sources. When the source of aid is limited to federal programs only, students enrolled in private two- and four-year institutions are shown as receiving substantially less aid than when all sources are considered: four-year private students received an average of $3,147 from federal financial aid, $1,750 less on average than they received from all aid sources together, and two-year private students received $2,704 from federal sources, which was $617 less than from all sources together. In contrast, students at all public institutions and students at proprietary institutions received approximately the same amount of aid on average from federal sources as from all sources together. Students in the four-year public institutions received $2,651 from federal aid programs, only $208 less than the average amount of aid received from all sources, and students in proprietary schools received $3,394 from federal programs, $265 less than from all aid sources. Students in the two-year public and public voc-tech schools actually received more aid on average from federal sources than from all sources, which means that students in these schools who did not receive federal financial aid got only small amounts from state and other sources, bringing down the whole average. These relationships suggest that federal financial aid and aid from state and other sources are complementary at the two and four-year private schools, while federal and non-federal sources are substitutes in the public schools and in the proprietary institutions.

Table IV.8
Average Federal Aid Received by Students Enrolled in the Different Types of Institutions

		Type of Institution							
				2-Year Private		2-Year Public			
	All Schools	4-Year Private	4-Year Public	All	Voc	All	Voc	Public Voc-Tech	Proprietary
Average Total Aid	$3,150	$4,897	$2,859	$3,321	$3,279	$1,676	$1,753	$2,008	$3,659
Average Federal Aid	2,666	3,147	2,651	2,704	2,723	1,788	1,850	2,078	3,394
Difference All - Federal	484	1,750	208	617	556	-112	-97	-70	265

Percentage of Students Receiving Aid and Average Amount of Aid Received from State and Other Sources by Students Enrolled in Different Types of Institutions[38]

Table IV.9 shows the percentage of students receiving state and other types of aid in the different types of institutions, as well as the average amount of aid they received. Students at two- and four-year private schools were substantially more likely than students in the other types of institutions to have received aid from state and other sources. This table also shows that a relatively small percentage—10 to 16 percent—of students enrolled in public schools and in proprietary schools received state financial aid, while a much larger fraction—25 percent—of students in the two- and four-year private schools received aid from state sources. The difference was even greater for other sources of aid: 17 percent of those enrolled in four-year public schools and less than 10 percent in the other public and the proprietary schools received financial aid from other sources, compared to 28 percent of those enrolled in two-year private schools and 45 percent of those enrolled in four-year private schools. [39]

Table IV.9
Percentage of Students Receiving Aid and Average Amount of Aid Received from State and Other Sources

		Type of Institution							
				2-Year Private		2-Year Public		Public	
	All Schools	4-Year Private	4-Year Public	All	Voc	All	Voc	Voc-Tech	Proprietary
	—Percentage Receiving—								
State Aid	15%	25%	16%	25%	27%	9%	10%	14%	10%
Other Aid	19	45	17	28	28	10	11	10	7
	—Average Amount Received—								
State Aid	$1,133	$1,759	$946	$1,339	$1,403	$585	$631	$855	$1,721
Other Aid[40]	1,671	2,538	1,269	1,613	1,264	640	679	536	2,015

[38] Other sources primarily include institutional aid, although business scholarships, community awards, and other aid of this sort are included in the other aid category.

[39] This is indicated by comparing the total fraction of students receiving aid with the sum of the fractions of students receiving federal, state, and other aid by type of institution. These sums show that some percentage of students at each type of institution receive aid from more than one source, but this fraction is much larger at two- and four-year private schools.

[40] The other aid category includes institutional aid, business scholarships, and community awards, among other sources of aid. Note that the average amount of aid received from these sources by students in proprietary schools is quite high, although the fraction of students receiving this type of aid is quite small. The large average amounts probably reflect aid for training programs awarded to employees by their employers or scholarships from some of the larger proprietary institutions, many of which do have endowments or scholarships.

The average amount of aid received from state and other sources also varied substantially by type of institution, but it followed the same pattern as the total aid and federal aid amounts. Students at private institutions, including proprietary, received a lot more aid on average than did students at public institutions. Again, the amount of aid closely follows the pattern of average costs in each of the different types of institutions, except for state aid to two-year public and public voc-tech schools. Although the total costs of attending two-year public schools are considerably higher than the total costs of attending a public voc-tech school, students at the voc-tech institutions received more state aid on average than those enrolled in the two-year public schools.

Proportion of Costs Covered by Financial Aid

Students at higher cost institutions receive more financial aid on average than students at the lower cost institutions, but what proportion of costs does this aid cover? How do vocational students who receive financial aid fare in relation to other students who receive financial aid? This section addresses these questions.

On average, students who received financial aid in Fall 1986 were able to cover about 75 percent of their total costs of attendance with that aid. (Table IV.10) There was some variation in the proportion of costs covered by aid at the different types of institutions, but the amount of variation was less than one might expect given the large disparities in the amount of financial aid received. Students enrolled in two-year private, proprietary, and four-year public institutions received approximately 80 percent of the costs of attendance through financial aid from all sources. Although the proprietary schools were somewhat more expensive on average than either the two-year private or the four-year public schools, all three were "middle-tier" in terms of costs; thus, it is interesting that students enrolled in these three types of institutions would receive the same amount of their costs in aid. Students at the lowest cost schools received a greater proportion of their total costs in aid than students in the middle or higher cost schools: those enrolled in public voc-tech institutions received 97 percent of their total costs from financial aid, and those enrolled in two-year public schools received 85 percent of their total costs in aid. Vocational students in the two-year public schools received about 80 percent of their costs in aid. Students at four-year private schools, in contrast, received about 63 percent of their total costs in aid. Thus, the amount of aid students received varied in relation to their costs, and the proportion of costs covered by aid was inversely related to the costs of attendance.

Table IV.10
Average Proportion of Total Costs of Attendance Covered by All Financial Aid and by Federal Financial Aid

	Type of Institution								
	All Schools	4-Year Private	4-Year Public	2-Year Private		2-Year Public		Public Voc-Tech	Proprietary
				All	Voc	All	Voc		
All Aid	75%	63%	78%	79%	73%	85%	80%	97%	79%
Federal Aid	61	38	66	60	54	73	70	94	72

The proportion of total costs covered by federal aid varied more than the proportion of costs covered by all aid, ranging from a low of 38 percent at private four-year schools to a high of 94 percent at public voc-tech schools. Overall, federal aid covered approximately 61 percent of costs incurred by financial aid recipients. However, students in the public voc-tech and proprietary schools did not receive a much smaller proportion of their costs from federal aid than from all aid: 94 percent compared to 97 percent at public voc-tech schools, and 72 percent compared to 79 percent at proprietary schools. This illustrates again the heavy dependence of students in these schools on federal financial aid.

Why did the proportions of costs covered by financial aid exhibit this inverse relationship between amount of aid received and total costs incurred? One reason is that the average amount of aid awarded to students from individual federal aid programs does not vary much by type of institution (Table IV.11). Those who get Pell or GSLs get approximately the same amount of aid on average whether they attend an expensive four-year private school or an inexpensive two-year public school.[41] Another factor is that students at the lower cost institutions tend to have lower incomes, which means that their expected family contributions are smaller. As a result, students with lower incomes tend to have greater proportions of their costs covered by financial aid.

Table IV.11 presents the percentage of students receiving aid from the Pell Grant, GSL, SEOG, NDSL, and CWS programs, as well as the average amount of aid received by students in the different institution types from each of these programs. The proportion of students receiving aid from the five generally-available federal aid programs varied widely by type of

[41] Although the amount received is related to income, many students receive the maximum amounts.

institution. For example, 47 percent of students at proprietary schools received a Pell Grant, but only 12 percent at two-year public institutions received a Pell in their aid package; 17 percent of all students enrolled in Fall 1986 received a Pell Grant. Similarly, 20 percent of all students received a GSL, but 67 percent of proprietary students received a GSL, as did 35 percent of four-year private school and 33 percent of two-year private school students. Only 6 percent of students enrolled in two-year public institutions received a GSL. Differences of similar magnitude were evident in the campus based programs as well.

Table IV.11
Percentage of Students Receiving Aid from Specified Federal Aid Programs and Average Amount Received by Aided Students from Each Program

		Type of Institution							
				2-Year Private		2-Year Public		Public	
	All Schools	4-Year Private	4-Year Public	All	Voc	All	Voc	Voc-Tech	Proprietary
	—Percentage Receiving—								
Pell Grants	17%	16%	19%	26%	27	12%	14	26%	47%
GSL	20	35	21	33	35	6	7	18	67
SEOG	6	12	7	4	5	1	1	2	8
NDSL	5	9	5	5	4	2	3	2	10
CWS	5	10	5	5	4	2	2	2	1
	—Average Amount Received—								
Pell Grants	$1,393	$1,485	$1,447	$1,498	$1,450	$1,146	$1,180	$1,257	$1,587
GSL	2,165	2,283	2,051	2,185	2,197	1,968	1,958	2,120	2,347
SEOG	1,026	1,062	965	1,076	1,085	1,027	1,027	Low-N	1,257
NDSL	668	848	657	561	622	525	470	Low-N	489
CWS	936	889	977	521	477	991	873	Low-N	1,100

However, the average amount of aid students received from these programs varied little by type of institution, even though the percentages of students receiving aid from the various programs differed sharply by type of school. Since the costs of attending the public two-year and public voc-tech schools were relatively low, the amount of aid received from these federal aid programs by students enrolled in these schools accounted for a substantially larger fraction of costs than was accounted for by the amount of aid received from these programs by students enrolled in more expensive schools. These are interesting results, particularly because they suggest that once students establish their eligibility for aid, they receive some minimum amount of aid that is nominally independent of their costs of attendance.

Composition of Financial Aid

The picture of the financial aid system presented thus far suggests that while a large fraction of students at the predominantly vocational institutions do not receive aid (since the two-year public schools account for the majority of vocational students nationwide), the vocational students who do receive aid are likely to have a very large fraction of their total costs of attendance covered by financial aid. However, not all types of aid are equivalent: there are three basic components that can be included in a financial aid package—grants, loans, and work-study—and grants are generally the most desirable type of aid. Do vocational students receive grants in proportions equivalent to their numbers, or do they have to rely on loans, a less desirable form of aid? This section examines the distribution and average amounts of grants and loans to students in the different types of institutions.

Figure IV.3 shows the percentage of students receiving grants and the percentage receiving loans in each type of institution. This figure also shows the percentage of students receiving any financial aid again for comparison purposes.[42] Virtually all students who receive financial aid at two-year public schools (28 percent) receive some kind of grant aid (25 percent), as do most of the aid recipients at public voc-tech schools (52 to 46 percent, respectively). The difference between the proportion of students receiving any aid and those receiving grant aid at public four-year and two- and four-year private institutions is about ten percentage points, but the biggest difference between the fractions of students receiving any aid and those receiving grants is at proprietary institutions, where 84 percent of students receive financial aid, yet only 60 percent receive some type of grants. In other words, students at the proprietary schools are heavily dependent on loan aid.

If we compare the fraction of students receiving loans to the fraction of students receiving financial aid, 62 percent of the aid recipients at four-year private schools received some kind of loan aid, as did 55 percent of the aid recipients at two-year private and four-year public institutions. Even smaller proportions of aid recipients at two-year public and public voc-tech schools, 29 and 38 percent respectively, received any kind of loan aid. In contrast, 85 percent of all aid recipients (which was 71 percent of all students enrolled) in proprietary schools incurred some kind of loan debt to attend in Fall 1986. Vocational students at the two-year schools received grants and loans in proportions similar to all students in those schools.

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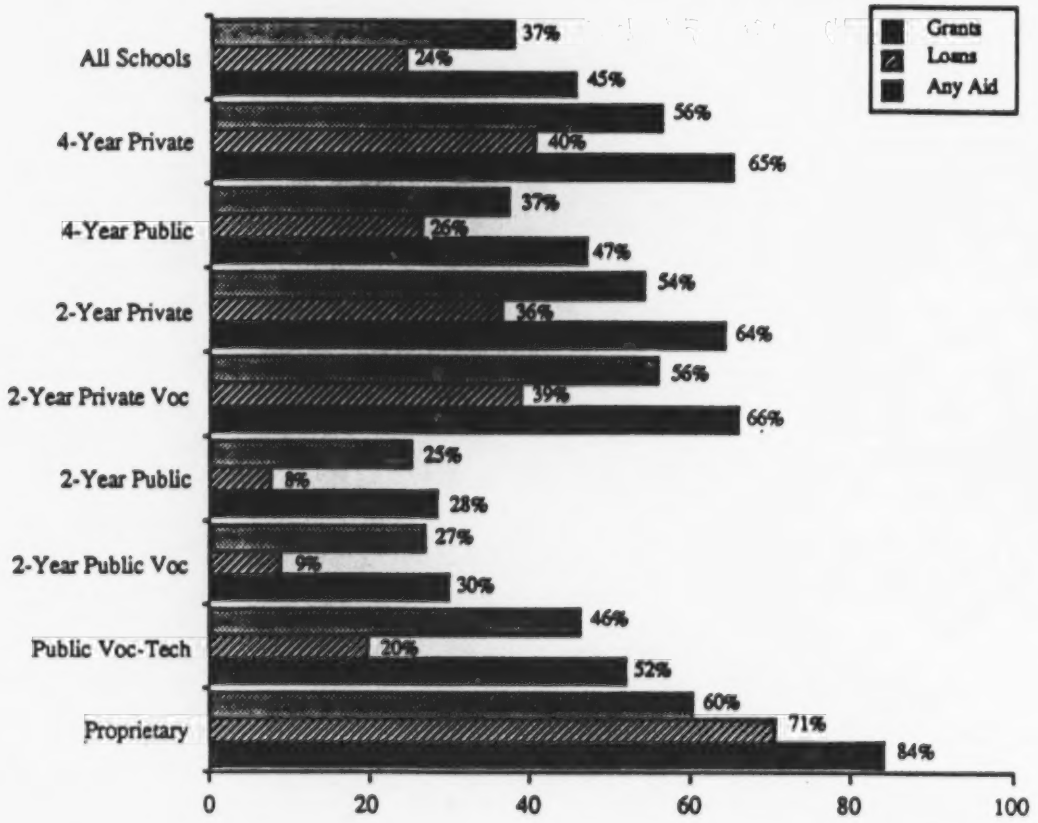
[42] These categories are not mutually exclusive.

Figure IV.3
Percentage of Students Receiving Grants and Percentage Receiving Loans in Each Type of Institution



Average Amount of Grants and Loans

The average amount of grant aid students received was associated with the type of institution they attended, but the average amount of loan aid was approximately the same in each type of institution. Table IV.12 shows the average amount of grant and loan aid from all sources received by students in the different types of institutions. Students in four-year private schools received substantially more grant aid than students in any of the other schools, while students in two-year public and public voc-tech schools received the smallest average amounts. The average amount of grant aid received by students is related in two ways to the type of institution they attended. First, students attending more expensive institutions will qualify for more aid, so they would also be more likely to receive greater amounts of grant aid. However, this explanation does not provide any insight into why students at proprietary schools, which are second in cost only to private four-year institutions, receive less grant aid than students in

private two-year schools. One possibility is that proprietary schools, unlike other private institutions and many public four-year schools, lack endowments and are therefore unable to provide institutional grant aid. Another reason could be that these schools are prohibited from participating in state grant programs in some states, so unlike other private schools, most of the grant aid received by students at proprietary schools comes only from federal sources.

Table IV.12
Average Grant and Loan Aid Received by Aid Recipients in the Different Types of Institutions

	Type of Institution								
	All Schools	4-Year Private	4-Year Public	2-Year Private All	2-Year Private Voc	2-Year Public All	2-Year Public Voc	Public Voc-Tech	Prop-rietary
Average Grant Aid	$2,151	$3,437	$1,930	$2,385	$2,255	$1,263	$1,334	$1,366	$2,053
Average Loan Aid	2,305	2,595	2,150	2,307	2,367	1,799	1,808	2,069	2,601

Unlike the average amount of grants, which follow to some extent the average costs of attending the various types of schools, the average loan aid obtained by students in Fall 1986 varied within a narrowly circumscribed range. The smallest average loans—$1,799—were taken out by students at two-year public schools, while the largest loans—averaging approximately $2,600—were taken out by students in proprietary and in four-year private schools. The narrowness of the range of variation in the average amounts of loans at the different schools is somewhat surprising, given the large variation in costs, but this probably reflects the fact that the GSL program (which accounts for most loan aid) set as its limit $2,500 per year in 1986, and many students took out close to the maximum amount of loans. What is most striking, however, is that the average size of the student loan in the public two-year and voc-tech schools and in the proprietary institutions is substantially larger than the average grant.

This is an interesting finding, and it seems to suggest that students in the public two-year and voc-tech schools and those enrolled in proprietary institutions are relatively more dependent on loans than are students in the other types of institutions. In order to evaluate the relative dependence of aid recipients on grants or loans, we constructed a ratio that shows the

aggregate amount of the type of aid relative to the proportion of students receiving that type of aid.[43] To illustrate the meaning of the ratio, the ratio would be one if half of total grant and loan aid was for grants and half of the aid recipients received grants. If the total grant aid were more than half the total grant and loan aid, but only half of the aid recipients received grant aid, the ratio would be greater than one, which would mean that students were relatively more dependent on grants than loans. A number less than one would indicate that they were relatively less dependent on grants than loans.

Table IV.13 shows that the dependency ratio for grants in all schools is 0.97, indicating that grants generate less aid per recipient than loans. On the other hand, the dependency ratio for loans in all schools is 1.05, which means that loans generate more aid per recipient than grants. Students in two-year public, public voc-tech, and proprietary institutions were relatively more dependent on loans than on grants, and students in the public voc-tech schools were particularly dependent on loans relative to the total amount of aid they received. Vocational students at the two-year schools were more dependent on loans than were all students in the same schools. In contrast, students at four-year private schools relied more on grants than on loans.

Table IV.13
Relative Dependence of Students on Grants and Loans

		Type of Institution							
				2-Year		Year			
	All Schools	4-Year Private	4-Year Public	Private All	Private Voc	Public All	Public Voc	Public Voc-Tech	Proprietary
Grants	0.97	1.14	0.97	1.02	0.98	0.95	0.92	0.89	0.87
Loans	1.05	0.81	1.04	0.98	1.02	1.15	1.25	1.27	1.11

[43] Specifically, the formula for the relative value of grants is $[G_a/(G_a+L_a)]/[G_r/(G_r+L_r)]$, and the formula for the relative value of loans is $[L_a/(G_a+L_a)]/[L_r/(G_r+L_r)]$, where:
G_a = the aggregate dollar amount of total grants in the type of institution;
L_a = the aggregate dollar amount of total loans in the type of institution;
G_r = the proportion of grant recipients and loan recipients receiving grants; and
L_r= the proportion of grant recipients and loan recipients receiving loans.
Thus, for grants, this ratio shows the proportion of grant plus loan aid accounted for by grants over the proportion of grant plus loan recipients accounted for by grant recipients, or , in other words, it is the relative value of grants over the relative proportion of grant recipients. The same is true for loans. Note that students receiving both grants and loans are counted twice, once as a grant recipient and once as a loan recipient.

Relative Contributions of Various Resources to Financing Postsecondary Vocational Education

This section shows the relative contributions of financial aid, parental support, and student earnings to the financing of postsecondary vocational education. Unlike the aid and parental and student contributions data presented in previous sections, which showed average amounts only for those with the specified type of resource, these data show the average amounts divided over the whole population of both aided and nonaided students, so that they sum to the total resources available. The costs shown are for all students, while the resources are broken down by aided and nonaided students.

Table IV.14 shows that aided students had total resources approximating their total costs, although students enrolled in the two-year public and proprietary institutions had fewer dollar

Table IV.14
Average Institution-Reported Costs of Attendance by Type of Institution, Fall 1986

		Type of Institution							
				2-Year Private		2-Year Public		Public	
	All Schools	4-Year Private	4-Year Public	All	Voc	All	Voc	Voc-Tech	Proprietary
				— Costs Incurred — (All Students)					
Total Costs	$6,437	$10,097	$5,146	$5,864	$6,148	$3,898	$4,076	$2,501	$6,881
Tuition & Fees	1,743	5,230	1,322	2,501	2,714	326	356	228	3,347
Other Costs	4,694	4,867	3,824	3,363	3,434	3,572	3,720	2,273	3,534
				—Resources Available — (Aided Students)					
Total Resources	6,774	11,058	6,205	6,631	6,186	3,227	3,335	3,291	5,876
Federal Aid	2,181	2,379	2,153	2,218	2,278	1,400	1,479	1,693	3,261
State Aid	397	716	338	504	548	228	254	240	195
Other Aid	713	1,843	431	730	509	202	181	50	181
Parent Cont.	2,418	4,727	2,101	2,263	1,846	838	791	691	1,348
Student Earn.	1,065	1,392	1,182	916	1,005	560	630	617	856
				— Resources Available — (Nonaided Students)					
Total Resources	3,694	8,202	4,849	4,204	4,183	1,779	1,873	1,639	4,090
Parent Cont.	2,770	6,876	3,670	3,297	3,073	1,148	1,249	950	2,810
Student Earn.	924	1,326	1,179	907	1,110	631	624	689	1,280

Source: NPSAS

resources on average than they faced in total costs. Since institution-reported cost data were more accurate and more consistent than student-reported costs, the total cost figures are based on institutional budgets for aided students. The disparity between costs and resources in the two-year public and proprietary schools probably reflects a low estimate by students of the value of in-kind resources such as room and board or transportation. However, this difference could also reflect some measure of the average unmet need for aided students at these schools.

Nonaided students had fewer dollar resources on average than aided students, and in every case are shown as facing higher costs than they could cover with those resources. Again, this could reflect the problems of estimating the value of in-kind resources for covering the costs of education or of unmet need, but it could also indicate that nonaided students tend to enroll in institutions with less than average costs for their type.

The two largest resources for aided students was federal financial aid and parent contributions. Student earnings were the next largest resource for most students, although financial aid from institutional or other non-state or non-federal sources was greater than earnings for students enrolled in the four-year private schools. Federal financial aid was by far the largest single resource for vocational students. Parents provided the majority of financial resources for nonaided students at all types of institutions.

CHAPTER V

WHO GETS FINANCIAL AID

The previous chapter described how the various types of financial aid are allocated to students attending different types of institutions. In part, differences among types of institutions reflect differences in their student populations. Some types of students are more likely than others to have received aid. This chapter focuses on who gets financial aid in terms of student characteristics. Two types of student characteristics are examined: characteristics that are related to aid eligibility and those that are not. Characteristics that are not related to financial aid eligibility include gender, race/ethnicity, age, degree objective, and vocational specialty. Although these characteristics do not determine eligibility for financial aid, there were strong differences in the aid patterns among these groups of students. Characteristics that are related to eligibility include cost of attending, family income, and enrollment status.

Characteristics Not Related to Financial Aid Eligibility

Race/Ethnicity

Financial aid patterns varied widely for students from different racial/ethnic backgrounds (Table V.1). Blacks were more likely than either Native Americans, Asians, Hispanics, or whites to have received aid. This was true for federal aid and for aid from all sources. Overall, 64 percent of blacks enrolled in postsecondary education received some form of aid. In contrast, only 49 percent of all Native Americans, 40 percent of all Asians, 48 percent of all Hispanics, and 43 percent of all whites received aid. Similar patterns emerged for receipt of federal aid—56 percent of blacks received federal financial aid, compared to only 40 percent of Native Americans, 33 percent of Asians, 41 percent of Hispanics, and 32 percent of whites.

To some extent, the differences can be explained by the differing economic circumstances of the groups. Since a disproportionately large fraction of blacks were from low-income households,[44] they were more likely to have required student aid in order to finance their postsecondary education. However, the regression analysis described in Chapter IV showed that blacks, compared to other students with similar educational expenses, personal resources, and enrollment levels, were still more likely to have received aid.

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44 "Social and Economic Characteristics of the White, Black, and Hispanic Origins Populations: 1985," *Statistical Abstract of the United States*, 1987, (Table 39).

Table V.1
Percentage of Students with Any Aid or Federal Aid and the Average Amount Awarded to Aided Students by Race/Ethnicity

		Type of Institution							
	All Schools	4-Year Private	4-Year Public	2-Year Private		2-Year Public		Public Voc-Tech	Proprietary
				All	Voc	All	Voc		
	—Percentage of Students with Aid—								
Any Aid									
Nat. Am.	49%	66%	67%	Low-N	Low-N	35%	34%	Low-N	77%
Asian/Pac. Is.	40	57	47	70	69	23	27	Low-N	87
Black	64	82	71	74	79	41	39	50	93
Hispanic	48	71	55	77	73	29	29	47	90
White	43	66	44	65	65	27	29	53	77
Federal Aid									
Nat. Am.	40	63	59	Low-N	Low-N	26	25	Low-N	77
Asian/Pac. Is.	33	44	37	59	62	21	25	Low-N	85
Black	56	71	63	62	68	32	30	43	92
Hispanic	41	57	46	65	64	24	25	33	87
White	32	45	33	50	50	18	20	44	75
	—Average Amount of Aid—								
Any Aid									
Nat. Am.	$3,062	$6,338	$3,349	Low-N	Low-N	Low-N	Low-N	Low-N	$3,861
Asian/Pac.Is.	3,735	6,359	3,443	4,466	Low-N	1,997	2,148	Low-N	4,031
Black	3,316	5,284	3,283	3,804	3,801	1,697	1,698	1,303	3,695
Hispanic	3,201	5,625	3,026	3,966	4,127	1,849	1,697	Low-N	3,728
White	3,073	4,726	2,724	3,272	3,142	1,610	1,700	2,262	3,600
Federal Aid									
Nat. Am.	2,454	3,817	2,661	Low-N	Low-N	Low-N	Low-N	Low-N	2,454
Asian/Pac.Is.	2,702	3,588	2,547	3,413	Low-N	1,882	Low-N	Low-N	2,702
Black	2,765	3,290	2,753	3,138	3,200	1,762	1,735	1,154	2,765
Hispanic	2,570	3,030	2,474	3,740	4,001	1,742	Low-N	Low-N	2,570
White	2,655	3,103	2,653	2,567	2,576	1,806	1,607	2,281	2,655

Source: NPSAS

This finding implies that factors not related to eligibility account for differences between the different racial/ethnic groups. One possibility is that cultural, social, or linguistic factors affect the likelihood of applying for aid, and that many non-black low income students who are eligible for aid do not apply for it. Financial aid application forms are long and require very detailed information, so language problems may have prevented many qualified Hispanics and Asian immigrants from having applied for aid. A possible reason for the higher proportion of blacks receiving aid may be that when affirmative action programs were first established, many were principally focused on increasing the representation of blacks in postsecondary education.

As part of their retention and recruitment efforts, institutions may have more aggressively pursued aid opportunities for black students at the expense of other groups.

The average amounts of aid also varied among students from different racial/ethnic groups, and the patterns varied among institutions types. Overall, Asians who received financial aid received higher amounts, on average, than did whites, blacks, or Hispanics. At four-year private colleges and universities, white students who received aid were awarded significantly less than either Native Americans, Asians, or Hispanics.[45] White aid recipients were awarded, on average, $4,726 through a combination of grants, loans, and work study. In turn, Native Americans were awarded an average of $6,338; Asians, $6,359; Hispanics, $5,625; and blacks, $5,284. At public four-year institutions, white students who received aid also had lower awards than Asians, blacks, or Hispanics. Within two-year public, public vocational/technical, and proprietary schools there were no statistically significant differences among the average aid amounts for students from different racial/ethnic backgrounds.

Degree Objective

Table V.2 shows marked differences among students with varying degree objectives and students with no formal degree intent. Those who planned to obtain some degree were more likely to have been awarded aid than those with no formal degree objective. Over one-half of those who were seeking certificates received some aid; 51 percent of those who were seeking a BA/BS received aid; and 41 percent of those who were pursuing AA degrees received aid. In contrast, only 17 percent of those not planning to obtain a degree received financial aid. The regression analysis reported in Chapter IV showed that the differences in the likelihood of receiving aid by degree objective are independent of costs, personal resources, and enrollment levels. One reason is that to receive a Pell grant, a student had to be enrolled in a program leading to a degree or certificate.

Students not pursuing a formal degree may have been less likely to have received aid because they did not apply for it. Many vocational students, particularly adults, do not enroll in postsecondary education to obtain degrees, but to obtain training in specific employment skills.[46] Some of these students may find that one or two semesters of coursework fulfills their educational objectives and that they do not need financial aid to support that much education. Or, students who were not planning a formal degree may have made their enrollment decisions

[45] The differences between aid awards for blacks and whites were not statistically significant.

[46] One-fourth of all postsecondary students who enrolled without a formal degree objective were vocational students at community colleges. An additional 4 percent were enrolled at either proprietary schools, public vocational-technical schools, or were vocational students at two-year private schools.

after financial aid application deadlines. Also possible is that students who enroll in postsecondary vocational education as a form of employment preparation are more likely to enroll less than half-time and not qualify for most types of aid.

Table V.2
Percentage of Students with Any Aid and the Average Amount of Financial Aid from All Sources Awarded to Aided Students by Degree Objective

		Type of Institution							
				2-Year Private		2-Year Public			
	All Schools	4-Year Private	4-Year Public	All	Voc	All	Voc	Public Voc-Tech	Proprietary
	—Percentage of Students with Aid—								
Certificate	54%	49%	39%	60%	66%	32%	31%	54%	86%
AA Degree	41	60	49	71	71	35	35	81	84
BA/BS Degree	51	67	48	63	64	26	23	Low-N	83
No Formal Award	17	39	27	36	67	12	15	15	65
	—Average Amount of Aid—								
Certificate	$2,858	$3,541	$2,184	$3,323	$3,332	$1,551	1,639	1,792	3,648
AA Degree	2,229	3,610	2,465	3,484	3,244	1,715	1,783	2,672	3,730
BA/BS Degree	3,539	5,015	2,843	3,593	3,406	1,663	1,505	Low-N	3,806
No Formal Award	1,829	3,260	1,895	2,357	Low-N	1,172	1,583	Low-N	3,339

Source: NPSAS

The relationships between students' degree objectives and the amount received were similar to the relationships between degree objectives and the probability of receiving aid. Of those students who received aid, students who were not pursuing a formal degree were awarded significantly less aid than students who had a degree objective. While the average amount of aid awarded to aided students not intending a formal degree was $1,829, aided students planning certificates received an average of $2,858 dollars, those planning AA degrees received an average of $2,229, and those planning a BA/BS received an average of $3,539.

The differences in the amounts of aid contributed to students with different degree objectives reflect relative differences in the costs of attending different types of institutions. Students who were pursuing certificates received more aid than students who were planning to obtain AA degrees because proprietary institutions (where most students seeking certificates were enrolled) generally had higher attendance costs than two-year public schools (where a

plurality of those seeking AA degrees were enrolled).[47] Similarly, the average cost of attendance at four-year schools were generally higher than the costs associated with attending a two-year school.

Student Age

At four-year colleges and universities there were significant differences in the likelihood of receiving aid for students in different age groups. Younger students were more likely than their older counterparts to have received aid. Table V.3 indicates that 70 percent of the students

Table V.3
Percentage of Students with Any Aid or Federal Aid and the Average Amount Awarded to Aided Students by Age

		Type of Institution							
				2-Year Private		2-Year Public			
	All Schools	4-Year Private	4-Year Public	All	Voc	All	Voc	Public Voc-Tech	Proprietary
	—Percentage of Students with Aid—								
Any Aid									
LE 23	50%	70%	49%	65%	68%	29%	30%	53%	83%
24-29	43	56	46	69	66	30	33	56	100
30+	35	48	37	57	63	27	30	48	79
Federal Aid									
LE 23	39	53	38	48	52	21	23	44	80
24-29	34	38	37	61	58	22	23	51	89
30+	25	28	27	44	50	17	19	34	74
	—Average Amount of Aid—								
Any Aid									
LE 23	$3,426	$5,237	$2,859	$3,416	$3,302	$1,724	$1,830	$2,061	$3,674
24-29	2,760	4,009	2,987	3,202	3,221	1,600	1,664	2,369	3,553
30+	2,464	3,248	2,699	3,064	3,262	1,660	1,708	1,712	3,723
Federal Aid									
LE 23	2,685	3,155	2,558	2,674	2,690	1,728	1,773	2,057	3,420
24-29	2,694	3,335	2,928	2,844	2,755	1,768	1,858	2,274	3,393
30+	2,558	2,865	2,930	2,671	2,786	1,898	1,973	1,941	3,333

Source: NPSAS

[47]The relative costs of attending different types of institutions were discussed in Chapter III.

who were 23 years old or under at private schools and 49 percent of those at public schools received aid. In contrast, only 48 percent of the private four-year college students and 37 percent of the four-year public college students who were 30 years old or more received aid.[48] At the two-year colleges there were no differences in the receipt of financial aid for students from different age groups. For example, regardless of age about 30 percent of the vocational students at two-year public college students received some type of aid. Similar results were found at the public vocational technical schools. At the proprietary institutions, students in the 24 to 29 years of age group were more apt to have received aid than students in both the older and younger age group.

With the exception of four-year private schools, age was not related to the amount of aid awarded to students at each of the different institutions shown in Table V.3. For example, in all age groups, vocational students at two-year private colleges received close to $3,000 in aid. At the four-year private schools, age was negatively associated with the amount of aid awarded. That is, older students received significantly less aid than students in younger age groups. Those students in the youngest age group received, on average, about $5,000 in financial aid while, those in the oldest age group received approximately $3,000 in aid.

Vocational Specialty

Table V.4 shows the fraction of vocational students enrolled in different occupationally specific majors who received aid. Although there were no clear patterns that persisted for all institutional types, students in some fields were more or less likely than students in other fields at the same type of institution to receive aid. For example, students enrolled in occupational home economics (OHE) programs at two-year private colleges were less likely than students in other fields to have received aid.[49] Only one-fourth of the students in OHE received aid, compared to 60 to 80 percent of those in other fields. Similarly, OHE students at proprietary institutions were generally less likely to have received aid.[50] At two-year public institutions, students specializing in health occupations or agriculture were more likely than those in other fields to have received aid. At public vocational-technical schools, there were no significant differences among students with various vocational specialties. Since most vocational students

[48] The difference between four-year private college students who were between 24 and 29 years of age and those who were 30 years old or over is not statistically significant. Similarly, at four-year public schools the difference between student who were 23 years old or less and those who were between 24 and 29 years of age is not significant. All other implied differences are significant.

[49] The difference in the proportion of agriculture and OHE students who received aid was not statistically significant.

[50] The differences between OHE students and students majoring in either trades and industry or communications were not significant. All other implied comparisons were statistically significant.

(72 percent) were enrolled at publicly controlled two-year colleges, the total column largely reflects financial aid patterns at these types of schools.

Table V.4
Percentage of Students with Any Aid and the Average Amount of Aid Awarded to Students who Received Aid by Vocational Major

	All Vocational Students	2-Year Private School Vocational Students	2-Year Public Vocational Students	Public Vocational Technical School	Proprietary School
	—Percentage of Students with Aid—				
Agriculture	45%	Low-N	43%	Low-N	Low-N
Business & Marketing	39	73	28	46	88
Health	48	67	39	65	89
Occupational Home Economics	54	25	33	54	72
Trades & Industry	42	64	33	44	78
Technical & Engineering	45	61	31	62	89
Communications	36	Low-N	18	Low-N	83
Education & Public Service	30	81	26	Low-N	97
	—Average Amount of Aid—				
Agriculture	$2,223	Low-N	Low-N	Low-N	Low-N
Business & Marketing	2,402	3,309	1,527	2,017	3,627
Health	2,564	3,177	2,128	2,412	3,649
Occupational Home Economics	2,918	Low-N	1,672	Low-N	3,401
Trades & Industry	2,414	3,202	1,971	1,422	3,733
Technical & Engineering	2,697	3,484	1,639	2,290	3,862
Communications	4,239	Low-N	Low-N	Low-N	4,788
Education & Public Service	2,273	3,262	1,775	Low-N	3,245

Source: NPSAS

Table V.4 shows the average amount awarded to aid recipients with different vocational majors. Generally, within institutional type there were no consistent differences in the amounts received by aided students with various vocational majors. At the two-year private colleges and public vocational-technical institutes, the differences between students with different vocational majors were not statistically significantly different. At two-year public colleges, students enrolled in courses in preparation for health occupations received slightly more aid than other students with different vocational majors.[51] At the proprietary schools, there were considerable

[51] Although the differences between health students and either business or technical & engineering majors were statistically significant, the differences between health students and those with other vocational majors were not.

differences in the average amount of aid provided to students with different majors. Students preparing for employment in education and public service careers received significantly less financial aid on average than did students majoring in all other vocational subjects except OHE. Additionally, OHE students received less aid than those who were studying either communications, or technical & engineering.

Because there is no targeting of financial aid to students in particular vocational majors, differences in the proportions of students receiving aid and the average amounts received must be related to the characteristics of the students enrolling in particular programs (such as race/ethnicity, income), their enrollment status (full- or part-time), or the costs of the schools that offer the programs rather than to the major. What the patterns do show, however, is that the financial aid system is not inadvertently fostering the goals of the Perkins Act by concentrating funds in technologically advanced occupations.

Gender

Table V.5 shows that there was no significant difference in the proportions of males and females who received any financial aid and the proportion who received federal aid. Overall, 44 percent of all males and 46 percent of all females received some type of aid. Males were also just about as likely as females to have received federal aid: 34 percent compared to 36 percent (not a statistically significant difference.) This parity between the sexes existed at all types of institutions.[52]

Table V.5
Percentage of Students with Any Aid or Federal Aid by Sex

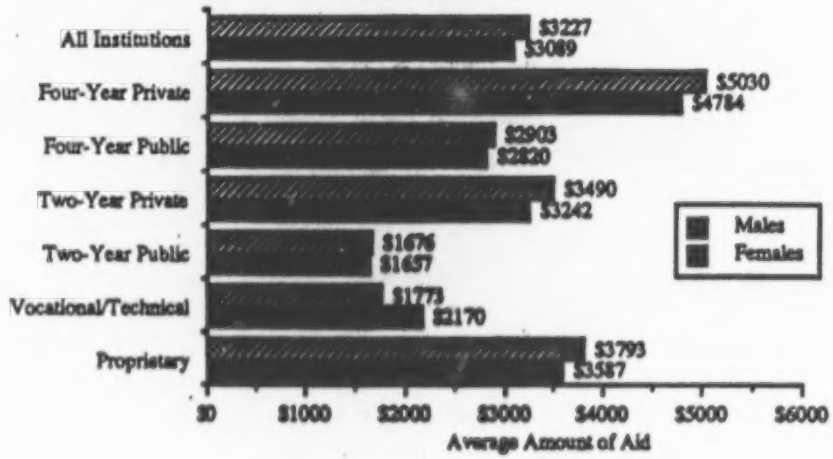
		Type of Institution							
				2-Year Private		2-Year Public		Public	
	All Schools	4-Year Private	4-Year Public	All	Voc	All	Voc	Voc-Tech	Proprietary
Any Aid									
Males	44%	65%	46%	55%	65%	28%	30%	49%	84%
Females	46	65	48	70	67	29	31	54	84
Federal Aid									
Males	34	48	36	41	51	20	20	32	80
Females	36	48	37	54	53	20	23	50	81

Source: NPSAS

[52]The apparently large difference between males and females at two-year private institutions is not statistically significant because of the large variation in the percentages receiving aid.

Students' gender was not related to the average amount of aid students received from either federal or all sources. Both males and females received approximately the same amounts in student aid (Figure V.1). On average, males received $3,227 in all forms of aid while females received, on average, $3,089 in aid. This pattern held for all types of institutions.

Figure V.1
Average Amount of Financial Aid from All Sources Awarded to Aided Students by Sex



Source: NPSAS

Characteristics Related to Financial Aid

As mentioned earlier, need-based student aid programs offer assistance to low-income students who lack the personal financial resources necessary to enroll in postsecondary education. The major factors considered in determining need include enrollment status, cost, and family income. Because these characteristics are used to make financial aid awards, we would expect to find differences among groups of students within these categories. For example, low income students should be more likely than students from higher income groups to receive aid. The next part of this chapter examines financial aid patterns for students according to each of these factors.

Enrollment Status

Financial aid is clearly targeted to full-time students. While 58 percent of all full-time students received some aid and 47 percent received federal aid, the corresponding percentages for part-time students were only 24 and 14 (Table V.6). In each institution type there was a large difference between the percentages of full- and part-time students receiving aid except in proprietary schools.

Table V.6
Percentage of Students with Any Aid or Federal Aid by Enrollment Status

		Type of Institution							
				2-Year Private		2-Year Public			
	All Schools	4-Year Private	4-Year Public	All	Voc	All	Voc	Public Voc-Tech	Prop-rietary
Any Aid									
Full-Time	58%	72%	53%	73%	71%	47%	45%	64%	86%
Part-Time	24	40	30	43	51	16	20	21	76
Federal Aid									
Full-Time	47	56	43	60	59	36	38	53	82
Part-Time	14	18	18	28	35	10	10	14	72

Source: NPSAS

There are several possible reasons for the differences between part-timers and full-timers. For one, the financial needs of part-time students tend to be somewhat lower than those of full-time students. The cost of part-time enrollment is somewhat lower than the cost of full-time enrollment,[53] students who are enrolled part-time may work more hours and consequently have more personal resources available to finance their education. Nevertheless, the regression analysis described in Chapter IV indicates that, independent of these conditions, full-time students were still more likely than part-time students to have been awarded aid. Thus, the disparity must be the result of other conditions as well as costs and resources.[54]

One possibility is that part-time students do not have the same access as full-time students do to many of the financial aid programs, since many financial aid programs have minimum

[53] Chapter II includes an extensive discussion of the costs associated with enrollment at the six types of postsecondary institutions.

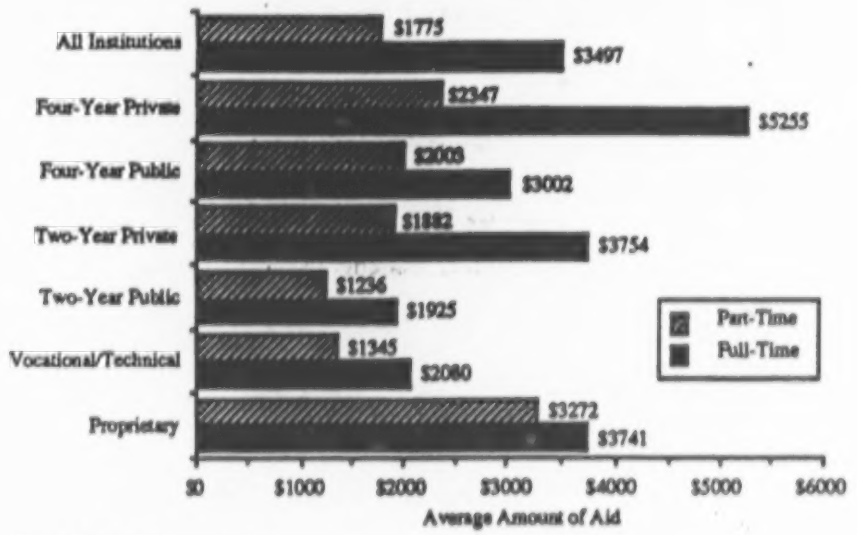
[54] The regressions on aid receipt described in Chapter IV show that for each increase in the number of hours of enrolled, there is a corresponding increase of about 1.5 percent in the probability of receiving aid.

enrollment requirements. For example, a student had to be enrolled at least half-time to qualify for a federal Pell grant or a GSL, the two largest aid programs. Part-time students may also be more likely than full-time students to not have a degree objective, which, as discussed above, is associated with less financial aid.

The differences in the proportions of part- and full-time students who received aid account for some of the aggregate differences in the distribution of aid among institutions. Since those with less than full-time status were less likely to have received aid, the amount of aid directed at schools where a large fraction of the student population was enrolled part-time may have been substantially reduced. Among the types of institutions examined here, two-year public colleges were the most likely to have been affected. Sixty-one percent of all students enrolled were enrolled less than full-time.

Part-time students were not only less likely to have received aid, on average, compared to full-time students, they also received less aid (Figure V.2). Aided students who were full-time students received, on average, $3,497 in financial aid, while those who were part-time received $1,775. To a large extent, these differences between full- and part-time students reflects differences in the educational costs faced by the two groups of students.[55]

Figure V.2
Average Amount of Financial Aid from All Sources Awarded to Aided Students by Enrollment Status



Source: NPSAS

[55] Costs for each of the groups of institutions were described in Chapter III.

Family Income

Since family income is one of the determinants of financial need, it was not surprising to find that as family income increased, the likelihood of having received aid decreased (Table V.7). Two-thirds of the students from families with incomes below $11,000 received aid. In contrast, just over one-fourth of those students in the highest income group, over $50,000, received some aid. This pattern existed for aid from all sources as well as aid from federal sources exclusively and also in each type of institution.

Table V.7
Percentage of Students with Any Aid or Federal Aid by Family Income

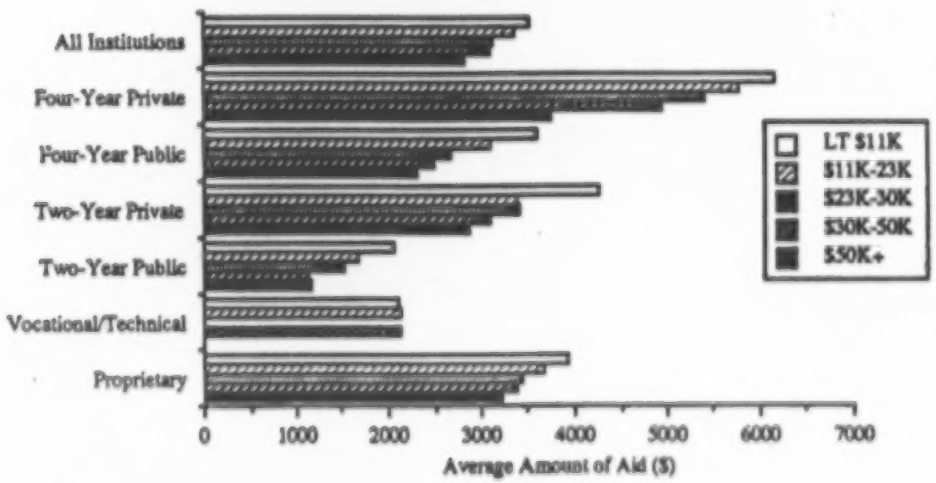
		Type of Institution							
				2-Year Private		2-Year Public			
	All Schools	4-Year Private	4-Year Public	All	Voc	All	Voc	Public Voc-Tech	Proprietary
	—Percentage of Students with Aid—								
Any Aid									
LT $11K	67%	84%	77%	73%	86%	48%	51%	74%	95%
$11K-23K	58	84	67	82	79	35	37	49	89
$23K-30K	50	78	54	68	66	30	34	43	87
$30K-50K	43	74	44	68	67	20	20	41	74
$50K+	28	46	24	41	31	14	11	32	61
Federal Aid									
LT $11K	61	76	71	68	78	42	48	61	94
$11K-23K	50	71	59	70	65	27	28	43	87
$23K-30K	40	63	44	52	52	19	23	39	82
$30K-50K	29	56	31	44	43	9	9	33	69
$50K+	15	24	12	23	18	6	5	32	55
	—Average Amount of Aid—								
Any Aid									
LT $11K	$3,510	$6,149	$3,592	$4,245	$4,112	$2,057	$2,070	$2,096	$3,916
$11K-23K	3,355	5,772	3,107	3,383	3,246	1,675	1,707	2,139	3,666
$23K-30K	3,139	5,399	2,676	3,416	3,263	1,510	1,817	Low-N	3,435
$30K-50K	3,112	4,950	2,493	3,101	2,850	1,122	1,123	2,120	3,374
$50K+	2,812	3,742	2,295	2,864	2,627	1,166	899	Low-N	3,228
Federal Aid									
LT $11K	2,877	3,804	3,039	3,240	3,064	1,901	1,898	1,911	3,654
$11K-23K	2,697	3,393	2,674	2,441	2,517	1,766	1,896	2,141	3,411
$23K-30K	2,489	3,057	2,321	2,626	2,590	1,720	1,878	Low-N	3,211
$30K-50K	2,552	2,905	2,430	2,589	2,651	1,486	1,366	Low-N	3,156
$50K+	2,605	2,888	2,643	2,486	2,977	1,070	Low-N	Low-N	3,056

Source:NPSAS

Within an income group, the likelihood of having received aid varied from one type of institution to another. These differences can be attributed to differences in the cost of attending different types of institutions. At schools where the average costs were relatively high (private and proprietary schools), students were more likely to have been awarded aid. Correspondingly, where average costs were relatively low (public schools), students from similar income groups were less likely to have received aid. For example, among students with family incomes between $23,000 and $30,000, 78 percent of those at private four-year schools received aid while only 30 percent of those at two-year public colleges received aid.

Family income was directly related to the average amounts awarded to aided students. Students from lower income families received more aid on average than those from higher income families. Overall, aided students from families with annual incomes below $11,000 received an average of $3,510. The average amount of aid received was $3,355 for students with family incomes between $11,000 and $23,000; $3139 for those with incomes between $23,000 and 30,000; $3,112 for those with incomes between $30,000 and 50,000; and $2,812 for those with family incomes over $50,000. This general pattern was found in each of the different type of schools (Figure V.3).

Figure V.3
Average Amount of Financial Aid from All Sources Awarded to Aided Students by Family Income



Source: NPSAS

Tuition Costs

Overall, financial aid was closely related to the tuition and fees charged at different types of institutions. For Table V.8, students were divided into three groups according to the tuition and fees charged by their institutions. Within groups of institutions, schools were ranked by the amount charged for tuition and fees. Those students whose tuition costs were in the lowest third were less likely to have received aid than those whose tuition costs were in the two higher groups. In turn, those in the middle group were less likely than students in the highest tuition group to have received aid. Thirty-three percent of all postsecondary students who incurred relatively low tuition costs received financial aid; 48 percent of those with medium costs received aid; and 58 percent of the students with relatively high costs received aid.

Table V.8
Percentage of Students Who Received Aid and the Average Amount Awarded to Aid Recipients by Tuition and Fees

	Low Tuition		Medium Tuition		High Tuition	
	Pct Aided	Avg Amt	Pct Aided	Avg Amt	Pct Aided	Avg Amt
Total	33%	$3,201	48%	$4,849	58%	$6,384
Four-Year Private	55	2,307	75	2,771	69	3,299
Four-Year Public	35	2,184	53	3,172	56	4,390
Two-Year Private	40	2,774	77	2,939	74	4,419
Vocational	43	1,253	78	1,367	72	1,904
Academic	74	2,145	77	3,182	87	4,144
Two-Year Public	15	1,539	22	1,405	48	1,838
Vocational	14	1,210	23	1,565	49	2,618
Academic	17	1,283	21	1,372	49	1,954
Public Voc/Tech	39	3,279	48	3,736	93	3,986
Proprietary	79	2,503	86	3,175	87	3,564

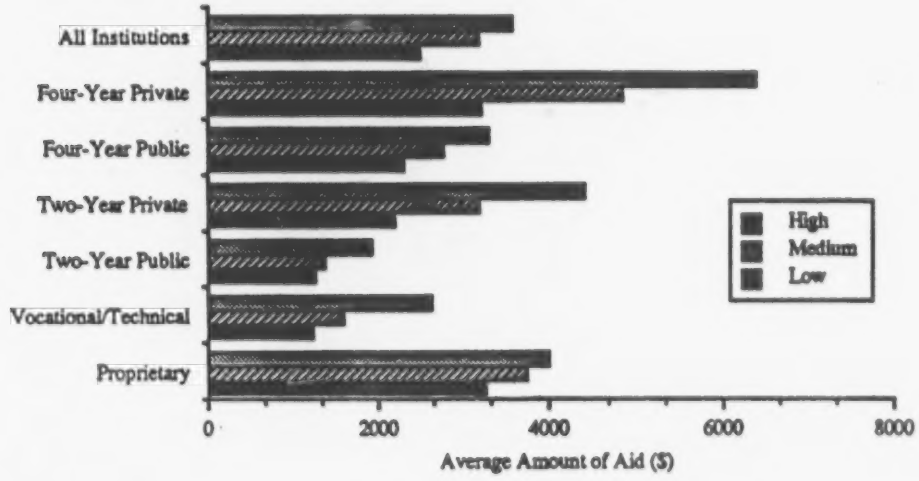
Source: NPSAS

The same pattern was observed for two- and four-year public schools. At public vocational/technical schools, students at low cost institutions were somewhat more likely than those at moderately priced schools to have received aid, although the difference is not statistically significant. Students enrolled at schools with tuition and fees in the highest third, however, were more likely than students who faced lower costs to have received aid. Proprietary school students were about equally likely to receive financial aid whether the tuition

costs were low, medium, or high—the differences between the percentages shown in Table V.8 are not statistically significant. Similarly, there were no statistically significant differences in the proportion of academic students in each tuition category who received aid at two-year private colleges. It should be remembered, however, that all private schools have high costs, so students are likely to need aid to attend even in the "low" cost schools.

Figure V.4 shows the average amount of aid awarded to postsecondary students according to their relative tuition costs. Overall, students at schools with higher tuition and fees received more financial aid than students with lower costs. On average, aid recipients at low-cost schools received $2,503 in financial aid; at medium-cost schools, $3,175; and at high cost schools, $3,564.

Figure V.4
Average Amount of Aid Received from All Sources by Tuition and Fees



Source: NPSAS

CHAPTER VI

FINANCIAL AID AND PERSISTENCE

The primary goal of federal financial aid programs is to increase the access of low-income students to postsecondary education. A second goal is to help students, once enrolled, to make satisfactory educational progress and eventually to complete their postsecondary education. The relationship between financial aid and persistence is an extremely difficult one to describe accurately, because the decision to persist is not made on financial grounds alone. How the student is doing academically, the quality of the program, the match between the program and the student's interests, and health and family problems are all important other factors that are difficult or impossible to control for in even the best-designed study.[56] Nevertheless, some studies have shown financial aid to have had a positive effect on persistence. In a study of persistence among aided and non-aided students at Washington State University, Jensen controlled for a number of other factors related to persistence (i.e., parent's education, income, and high school grades). The results showed a modest increase in persistence among students who received a combination of grants, loans, and work-study.[57] Using data from the high school class of 1972, Terkla also found that after controlling for various social and demographic characteristics, financial aid had both direct and indirect positive effects on persistence.[58] Furthermore, Murdock's meta-analysis, which examined a number of other studies, supported this finding and further concluded that financial aid has a greater influence on persistence in two-year colleges than in four-year colleges because two-year colleges enroll larger proportions of lower-income and minority students, and these are the students for whom financial aid is most important.[59]

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[56] For example, a study of persistence of students at two-year colleges identified three factors not related to financial aid which contribute to students' persistence. For men, the factors which contributed towards persistence were academic integration which was measured by college grades, social interaction (a composite which measured the students interaction with administrators and faculty as well as participation in extracurricular activities), and pre-college interest in the institution attended. For women, the factors were socioeconomic status, social interaction, and academic integration. Ernest T. Pascarella, John C. Smart, and Corinna A Ethington, "Long Term Persistence of Two-Year College Students," *Research in Higher Education*, vol. 24 no. 1, 1986, pp.47-71; and Ernest T. Pascarella and David W. Chapman, "A Multi-institutional, Path Analytical Validation of Tinto's Model of College Withdrawal," *American Education Research Journal*, vol. 20 no. 1, Spring 1983, pp. 87-102.

[57] Eric Jensen, "Student Financial Aid and Degree Attainment," *Research in Higher Education*, vol. 20, 1984, pp. 119-127.

[58] Terkla's path analysis model controlled for sex, race, parent's education, parent's income, and college aspirations. In addition, she included three institutional variables which identified private vs. public schools, two-year vs. four-year schools, and elite vs. non-elite schools. Dawn G. Terkla, "Does Financial Aid Enhance Undergraduate Persistence?," *The Journal of Student Financial Aid*, vol. 15 no. 3, Fall 1985, pp. 11-18.

[59] Tullisse A. Murdock, "It Isn't Just Money: The Effects of Financial Aid on Student Persistence," *The Review of of Higher Education*, vol. 11 no. 1, Autumn 1987, pp. 75-101. See also, Jacob O. Stampen and

While there is some agreement that financial aid enhances student persistence, there has been less consistency on the effects of particular types of aid or specific aid programs. Astin concluded that grants had a positive effect on persistence while loans had a small negative effect.[60] In contrast, Peng and Fetters found that loans were not significantly related to persistence in either four- or two-year colleges.[61] A path analysis model developed by Vorhees showed that independent of student residence, ethnicity, sex, high school ranking, college grades, financial need, and non-campus based financial aid, persistence and performance during the first year were positively associated with participation in one of the federal campus-based financial aid programs: College Work-Study (CWS), National Direct Student Loans (NDSL), or Supplemental Educational Opportunity Grants (SEOG).[62] Using discriminant analysis, Herndon found that work-study programs fostered persistence.[63]

In this chapter, we use the HS&B data to examine the relationship between financial aid and persistence from two perspectives, first comparing financial aid patterns for completers and noncompleters, and then comparing completion patterns for aided and non-aided students. We also examine how financial aid was distributed in the aggregate between completers and noncompleters.

Financial Aid Patterns for Completers and Noncompleters

At the end of the 1983-84 academic year, approximately one-third of the 1980 high school graduates who enrolled in postsecondary education had completed some type of degree or certificate. Four percent had received a certificate; 8 percent had received an AA in a vocational subject; 3 percent had received an AA in an academic subject; and 17 percent had

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Alberto F. Cabrero, "Exploring the Effects of Student Aid On Attrition," *Journal of Student Financial Aid*, vol. 16, Spring 1986, pp. 28-40; Richard A. Voorhees, "Student Finances and Campus-Based Financial Aid: A Structural Model Analysis of the Persistence of High Need Freshmen," *Research in Higher Education*, vol. 22 no.1, pp.65-92.

[60] A. W. Astin, *Preventing Students from Dropping Out*, San Francisco; Jossey-Bass, 1975.

[61] Samuel S. Peng and William B. Fetters, "Variables Involved in Withdrawal During the First Two Years of College: Preliminary Findings from the National Longitudinal Study of the High School Class of 1972," *American Education Research Journal*, vol. 15 no. 3, Summer 1978, pp. 129-144.

[62] Since some studies have indicated that students who live on campus are more likely to persist, this research controlled for student residence. Richard A. Voorhees, "Financial Aid and Persistence: Do the Federal Campus-Based Aid Programs Make a Difference?" *The Journal of Student Financial Aid*, vol. 15 no. 1, Winter 1985, pp. 21-30;

[63] Herndon's discriminant function model included over fifteen characteristics including: an aptitude index, sex, race, age, ethnicity, Pell grant eligibility index (as a proxy for socioeconomic status), school-year residence, grant awards, loan awards, and CWS awards. Of these, only three variables were significantly related to continued enrollment during the three years observed: the aptitude index, CWS, and school-year residence. Steve Herndon, "The Impact of Financial Aid on Student Persistence," *The Journal of Student Financial Aid*, vol. 14 no. 2, Spring 1984, pp. 3-9.

received a BA or BS degree. An additional 27 percent were still in school and the remaining 41 percent had either stopped or dropped out. The HS&B data set, being longitudinal, allows us to compare the financial aid patterns of these three groups: completers, noncompleters still in school, and noncompleters no longer in school.

Table VI.1 shows, for 1980 high school graduates who had enrolled in postsecondary institutions by 1984, the percentages that received any aid, grants, and loans, and the average

Table VI.1
Percentage of 1980 High School Seniors Who Received Any Aid, Any Grants, or Any Loans and the Average Total Amounts Received in Grants and Loans Between 1980-81 and 1983-84[64]

	Pct with Any Aid	Grants		Loans	
		Pct	Avg Amt	Pct	Avg Amt
Completers					
Any Degree	70%	53%	$4,985	49%	$5,527
Certificate	42	32	1,683	18	3,089
Vocational AA	61	48	1,961	31	3,908
Academic AA	59	48	3,346	31	5,427
BA/BS	79	58	6,579	61	6,139
Noncompleters					
All Noncompleters					
Still in School	56	44	4,339	41	4,818
Out of School	42	33	2,329	23	3,124
Voc. Noncompleters					
Still in School	29	24	2,166	12	2,706
Out of School	32	24	1,497	17	2,798
Acad. Noncompleters					
Still in School	58	46	4,434	43	4,863
Out of School	46	37	2,565	25	3,221

Source: High School and Beyond 1980 Seniors

amounts of grants and loans received. For completers, the length of the degree program was positively related to the likelihood of receiving aid. Students who obtained bachelor degrees were more likely than students who obtained certificates or two-year degrees to have received

[64] The cumulative amounts of aid shown in Table VI.1 are simply the sum of financial aid awards made during each year between 1980-81 and 1983-84. No annual adjustments were made for inflation.

aid. Additionally, those with AA degrees were more likely than those who earned certificates to have received aid. Seventy-nine percent of those with BA's received aid, compared to 59 percent of those with academic AA's, 61 percent of those with vocational AA's, and 42 percent of those with certificates.

The patterns for all forms of aid continued are the same when grant and loan aid are examined separately. Students who earned certificates were less likely than students who earned two- or four-year degrees to have used grants to finance their postsecondary education. Whereas 58 percent of BA degree holders and 48 percent of AA degree holders were awarded grants, only 32 percent of all certificates holders were awarded grants. Similarly, the likelihood of borrowing increased with the length of the degree program. Only 18 percent of the students who obtained certificates by 1984 relied on loans to finance their postsecondary education. In contrast, 31 percent of those who obtained AA's and 61 percent of those who obtained BA's used loans to meet college costs.

Table VI.1 also shows the proportion of non-completers—including those who were still in school and those who were no longer in school—who received aid. Students who had not completed a postsecondary degree or certificate were less likely than those who had completed a degree or certificate to have received aid. Just over one-half (56 percent) of the students who were still in school had received some type of aid, and only 42 percent of students no longer in school as of 1984 had received aid, compared to the 70 percent of completers who had received aid. Similarly, students who received certificates or AA's in vocational subjects were more apt to have been awarded aid than were vocational students who did not complete a degree or certificate by 1984.[65] Only 29 percent of the vocational students who were still in school in 1984 had ever received financial aid, and only 32 percent of those who either stopped or dropped out had ever received aid, while 61 percent of those who received a vocational AA and 42 percent of those who received a certificate received aid.

To some extent, differences in the likelihood of having received aid reflect differences in the amount of time spent in school (Table VI.2). Students who are enrolled briefly are less likely to need aid than those who are enrolled over longer periods and, in particular, those who complete degrees. Among vocational students who had not completed a degree or certificate and were not enrolled in 1984, only 23 percent of those who completed fewer than 12 courses received aid. In comparison, 77 percent of those students who completed between 24 and 35

[65] The category 'vocational students' includes all students who were last enrolled at a proprietary or public vocational technical school as well as students at two-year colleges who were concentrating their coursework in vocational areas.

courses by 1984 had received financial aid. This is consistent with the earlier finding that students who enroll without having a specific degree objective may be less apt to pursue financial aid.[66] Unfortunately, what the data cannot tell us is the direction of the causal relationship—that is, whether students dropped out because they did not have aid or whether they did not need aid because they were enrolled only a short time.

Table VI.2
Percentage of 1980 High School Seniors Who Did Not Complete Their Postsecondary Education by 1984 Who Received Financial Aid by the Numbers of Courses Completed as of 1984

	Number of Courses Completed by 1984			
	Less than 12	12-23	24-35	36 or More
All Non-completers				
Still in School	23%	46%	53%	71%
Out of School	32	49	71	67
Voc. Non-completers				
Still in School	20	36	Low-N	Low-N
Out of School	23	44	77	Low-N
Acad. Non-completers				
Still in School	24	48	53	71
Out of School	37	51	69	67

The cumulative amounts received in grant aid by students who completed degrees varied by the type of degree (Table VI.1). For each degree category, the table shows the average cumulative amounts of aid received up until the time of degree completion. Aid awarded to students who continued beyond their first degree was excluded. Among those who received aid, those who completed four-year degrees received, on average, $6,579 in grant aid from federal and other sources. In comparison, aid recipients who earned certificates received $1,683; those who obtained vocational AA's, $1,961; and those who achieved academic AA's received $3,346 in aid. Although students with academic and vocational associate degrees attended the same types of institutions, there was a large disparity between the grant totals for the two groups of students. In some part, this may result from differences in the amount of time students were enrolled prior to completion. An earlier study for the National Assessment of Vocational Education showed that about one-half of the vocational AA recipients completed

[66] The NPSAS data indicated that students who did not have a specific degree objective were less likely to have received aid than students who were planning to complete some type of degree (Chapter V). This was true within each of the different types of institutions examined in this study.

their degrees in two years or less. In contrast, just 40 percent of those who received AA's in academic subjects completed within the same time period.[67] Similarly, results from this study show that 1980 high school seniors who completed an AA degree in a vocational subject completed fewer credits than those with comparable degrees in academic subjects.[68] Together, these findings suggest that academic students received more total aid than vocational students because they were enrolled for longer periods of time.

Table VI.1 also shows the total amounts borrowed by 1980 high school seniors who completed some postsecondary degree by 1984. The total loan burdens of those with bachelor degrees were significantly higher than the loan burden incurred by recipients of one-year degrees or two-year degrees in vocational subjects.[69] In addition, students who earned certificates borrowed significantly less than those who earned academic two-year degrees. Given the additional costs associated with attending school for a longer period of time, these findings are not surprising. Among those who borrowed, students with certificates owed an average of $3,089, students with vocational AA's owed $3,908, those with academic AA's owed $5,427, and those with BA's owed $6,139. While the difference between students with vocational and academic two-year degrees appears to be quite large, the difference is not statistically significant.[70]

Although these figures estimate the average total grants and loans through federal, state, and institutional student aid programs, they do not include grants or loans from private sources such as employers, parents, or other family members. Thus, to some extent, these figures may slightly underestimate the total amount of debt students incurred to finance their education and the amount of grants they were awarded.

Table VI.1 also shows the cumulative grants and loans for non-completers. Of particular concern are the loan burdens accumulated by students who did not complete. A total of 17 percent of all vocational students who did not complete had loans, and the average loan was

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[67] W. Norton Grubb, *Access, Achievement, Completion, and "Milling Around" in Postsecondary Vocational Education*, a report prepared for the National Assessment of Vocational Education, U.S. Department of Education, June 1988.

[68] Course enrollments for students with differing levels of financial aid are discussed later in this chapter.

[69] The difference between students with academic AA's and BA's was not statistically significant.

[70] Although the difference between between BA recipient and academic AA recipients was smaller than the difference between those with academic versus vocational AA degrees, the first comparison was statistically significant while the latter was not. Statistical significance is a function of the magnitude of the difference between means as well as the size of the standard error of those means. The standard error is a function of the number of observations incorporated in the calculation of the mean and the amount of variation about the mean. In general, the more observations included the smaller the standard error; similarly, the less variation among values about the mean the smaller the standard error. In this instance, the standard error for AA degree recipients in vocational subjects was much larger than the standard error for BA recipients.

$2,798. Although the amount was lower for vocational than academic students, it nevertheless represents a sizeable amount, and one that vocational students who do not complete may not be able to repay. An earlier study by Hansen maintained that recent increases in the student loan default rates are not the result of the size of the student loan but the employment and wage prospects of students after they leave school.[71] If students, particularly those from low-income families, leave school without increasing their earning potential, then they are apt to have problems repaying their student loans.

Previous research using High School and Beyond shows that there were large disparities between the wages of non-completers, students who completed one- or two-year degrees, and students who completed four-year degrees. Students who completed BA degrees by 1986, earned significantly more than students with less postsecondary education. Among those students who have worked full-time since leaving school, BA recipients earned, on average, $7.87 per hour in 1986 while the hourly wage for those with one- or two-year degrees was, on average, $6.10. For non-completers the average hourly wage was even lower ($5.88 per hour). In addition, the wage differences between students with varying levels of education were even larger among students who had not consistently worked full-time. Non-completers earned, on average, $6.23 per hour while recipients of one- or two-year degrees earned $7.45.[72] These findings suggest that student loans represent a much greater burden for non-completers and students with certificates or two-year degrees than they do for BA recipients.

Completion Patterns for Aided and Non-Aided Students

The question of interest here is whether the provision of financial aid is associated with completion or noncompletion. That is, if students are aided, are they more likely than non-aided students to finish? While the findings are not sufficient to conclude the debate regarding the effects of aid, they are consistent with the work of others described at the beginning of this chapter.

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[71] Janet S. Hansen, *Student Loans: Are They Overburdening A Generation*, The Washington Office of the College Board, February 1988. See pp. 16-23.

[72] Not only were the earnings of non-completers somewhat lower than those of BA degree recipients, the same study indicated that these students were more likely to have children, which places additional demands on the students' limited income. See, Eva E. Eagle, et al., *High School and Beyond: A Descriptive Summary of 1980 High School Seniors, Six Years Later*, a contractor report prepared for the National Center for Education Statistics, U.S. Department of Education, July 1988; John Tuma, *High School and Beyond: Labor Force Experiences of the 1980 Senior Class*, a contractor report prepared for the National Center for Education Statistics, U.S. Department of Education, January 1988.

For this analysis, the members of the HS&B cohort who were enrolled between 1980-81 and 1983-84 were placed into three categories: "never aided" students, who did not receive any financial aid while enrolled; "sometimes aided" students, who received some aid, but did not receive aid during each year that they were in school; and "always aided" students, who received aid during each year they attended a postsecondary institution between 1980 and 1984. Close to one-half of all students (46 percent) were never aided, 28 percent were sometimes aided, and 26 percent were always aided. Since most financial aid is based on need, data are shown separately for students with different family incomes.[73]

Table VI.3 shows a strong relationship between the receipt of aid and persistence. Among students with similar family incomes, a much greater percentage of those who were never aided dropped out than completed. For example, of the students in the lowest income group (under $12,000), 65 percent of those who never received aid dropped out, while only 18 percent completed. Even in the highest income group ($25,00 or more), never aided students were more likely to drop out than complete—42 percent of those who were never aided dropped out, and 27 percent completed. The relationship between aid and persistence was even more dramatic among vocational students. Of the vocational students from families with incomes between $12,000 and 16,000, three-fourths of those who were not aided left prior to completion while just over one-fifth completed. In contrast, of those from the same income group, 57 percent of the students who were always aided completed and 40 percent were out of school in 1984.

Among students who were always aided, students in the higher income groups were more likely to complete than drop out. Always aided students in the $12,000-16,000 income group were only slightly more likely to complete than drop out, however. In the lowest income group, students were more likely to drop out than complete regardless of their aid status, although a greater percentage of those always aided completed than those never aided.

In each income group, students who were never aided were more likely than those who were aided to have either stopped out or dropped out. For example, among students with family incomes between $12,000 and $16,000, 67 percent of those who did not receive aid left school prior to completion. In contrast, only 38 percent of those who were sometimes aided and 36 percent of those who were always aided left school prior to completion. Even among students from the highest income group ($25,000 or more), there were large differences; 56 percent of the non-aided vocational students dropped or stopped out, compared to 32 percent of

[73] Although a number of factors go into determining need, family income will serve as a strong and efficient proxy in this analysis.

the sometimes aided vocational students and 27 percent of the always aided vocational students. Although there were differences between the fraction of students who were either sometimes aided or always aided and left school before receiving a diploma, these differences were small and not statistically significant.

Similarly, in each income group students who were always aided were more likely than students who were never aided to complete. Even in the lowest income group, 33 percent of those always aided completed, while only 18 percent of those never aided completed. In the highest income group, 55 percent of those always aided completed, compared to only 27 percent of those never aided.

Table VI.3
Outcomes for All Postsecondary Students and Postsecondary Vocational Students Who Were Never Aided, Sometimes Aided, and Always Aided

	All Students			Vocational Students		
		No Degree - 1984			No Degree - 1984	
	Completed	Still in School	Out of School	Completed	Still in School	Out of School
Total	32%	27%	41%	34%	10%	56%
LT $12K						
Never Aided	18	16	65	23	9	68
Sometimes Aided	26	35	39	36	20	43
Always Aided	33	24	42	48	5	47
$12-16K						
Never Aided	14	19	67	21	5	74
Sometimes Aided	32	30	38	21	8	71
Always Aided	41	23	36	57	3	40
$16-24K						
Never Aided	19	22	59	19	14	66
Sometimes Aided	35	35	30	44	10	46
Always Aided	44	24	32	59	5	36
$25K or More						
Never Aided	27	31	42	34	10	56
Sometimes Aided	38	39	23	58	10	32
Always Aided	55	24	21	71	2	27

Source: HS&B 1980 Seniors

There are some interesting differences between completers who sometimes received aid and those who never received aid. Completers with family incomes over $12,000 with some aid were more likely to complete than those with no aid. For students in the lowest family income groups, however, where the need for aid is greatest, the difference between those who were not aided and those that were sometimes aided was not statistically significantly different. This suggests that for students with very low incomes aid only some of the time may not be effective in encouraging completion. Among completers in the highest income group, there was a significant difference in the completion rates for those who sometimes received aid and those who always received aid, 38 percent versus 55 percent. The difference between sometimes aided and always aided was not statistically significant among students in the two income groups in the middle, however.

Aggregate Distribution of Financial Aid

Between 1980 and 1984, 62 percent of the 1980 high school seniors enrolled in some form of postsecondary education.[74] By 1984, 32 percent of them had completed a degree or certificate; 41 percent had left postsecondary education without completing; and the remaining 27 percent were still in school.[75] Table VI.4 shows how financial aid was distributed among these three groups of students during the four year period. One-half of all aid awarded between 1980-81 and 1983-84 to members of the high school class of 1980 went to students who completed some type of degree or certificate. Another 31 percent of the aid went to students who had not completed a degree but were still in school. Finally, 18 percent went to students who left postsecondary education before completing a program—that is, to students who either stopped or dropped out. Patterns in the distributions of grants and of loans were very similar.

Table VI.4 also shows that the patterns of financial aid distribution among vocational students differed from the patterns for all postsecondary students. About 66 percent of all aid awarded to vocational students went to students who completed a postsecondary degree or certificate in a vocational area. On the other hand, 30 percent of the total amount of aid went to students who withdrew prior to completion. The difference in the patterns for academic and

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[74] W. Norton Grubb, *Access, Achievement, Completion, and "Milling Around" in Postsecondary Vocational Education*, a report prepared for the National Assessment of Vocational Education, June 1988.

[75] These findings depart from those offered in *Access, Achievement, Completion, and "Milling Around" in Postsecondary Vocational Education*. This variation largely results from the use of slightly different samples; while the Grubb study included all 1980 seniors with postsecondary transcripts, this study relied on a smaller subsample of students who had complete transcripts and financial aid records. A recent study using the third follow-up data (1986) indicated that by 1986, 55 percent of the 1980 high school seniors who entered postsecondary education by 1984 completed some type of degree or certificate. See, Eva E. Eagle, et al., *High School and Beyond: A Descriptive Summary of 1980 High School Seniors, Six Years Later*.

vocational students is probably largely due to the fact that vocational programs tend to be shorter than academic programs. As a result, relatively few vocational students were still in school after four years, while many academic students were. When more of the academic students finish, the patterns may become more similar. Nevertheless, it is disturbing that 30 percent of all loans to vocational students went to students who did not complete and therefore were in the worst position to pay back loans.

Table VI.4
Distribution of Financial Aid to 1980 High School Seniors as of 1984 by Academic Status in 1984

	Completed a Degree or Certificate	Non-Completers: Still in School	Non-Completers: Out of School	Total
All Students				
Any Aid	50%	31%	18%	100%
Any Grants	50	31	19	100
Any Loans	51	32	18	100
Vocational Students				
Any Aid	66	5	30	100
Any Grants	65	7	28	100
Any Loans	69	-	31	100
Academic Students				
Any Aid	48	35	17	100
Any Grants	48	34	18	100
Any Loans	49	36	16	100

Source: High School and Beyond 1980 Seniors

CHAPTER VII
CONCLUSIONS

Student financial aid is the major source of federal funding for postsecondary vocational education. The federal financial aid system provided more than $4 billion in generally available federal financial aid to students enrolled in vocational programs and institutions in 1986-87, compared to the roughly $320 million provided annually through the Perkins Act to support postsecondary vocational education. Without an understanding of how financial aid interacts with postsecondary education, it is not possible to assess how well the financial aid system serves federal vocational education objectives. To contribute to such an understanding, this report has described how financial aid flows to vocational students and institutions.

The advantage of relying on demand-oriented policies to achieve federal goals for vocational education is that the federal government does not intervene directly in the delivery of educational services: students make decisions about where to go to school, what types of school to attend, and what subjects or vocation to pursue. The federal government makes financial aid available to students to pursue their interests. This is a democratic, market-oriented approach to providing vocational education, and the market determines how much vocational education will be supplied.

The disadvantages of relying on demand-based policies are that federal goals for vocational education may not be achieved. By relying on the market and on student interests to distribute themselves across the postsecondary education system, the federal government removes itself from directly influencing the supply of vocational education, and thus limits its ability to encourage schools to adopt federal goals as their own. Direct intervention is more obtrusive, but it is also more direct.

Most Financial Aid Goes to Four-Year Institutions

Most financial aid subsidizes students enrolled in four-year institutions. Since the four-year schools account for over half of all postsecondary enrollments, this is not surprising. However, a disproportionate amount of financial aid goes to four-year students, even after taking the distribution of enrollments into account. The four-year schools accounted for 55 percent of all enrollments in Fall 1986, but students enrolled in these schools received 73 percent of all financial aid and 67 percent of all federal financial aid. In contrast, students

enrolled in the two-year, voc-tech, and proprietary schools accounted for 45 percent of all enrollments, but they received 27 percent of all financial aid and 33 percent of federal financial aid.

Furthermore, the four-year schools received the bulk of direct funding from federal sources, over and above the subsidy provided to students through the financial aid system. Table VII.1 shows the total revenues received by postsecondary institutions from various sources in 1986-87. Of the $13 billion in direct revenues from federal sources, almost $12 billion went to the four-year schools. Thus, both federal financial aid to students and direct federal contributions to higher education institutions are concentrated in the four-year sector.

Table VII.1
Total Revenues for Higher Education by Source, 1986-87[76]
(millions of dollars)

		Type of Institution			
	All Schools	4-Year Private	4-Year Public	2-Year Private	2-Year Public
Total Revenues	$103,003	$34,952	$54,961	$1,172	$11,917
Tuition & Fees	33,791	16,817	13,521	850	2,603
Federal	13,032	4,284	7,393	75	1,180
State	29,912	669	23,584	22	5,637
Local	2,545	217	299	7	2,027
Other*	23,543	12,970	10,164	118	470

* Includes revenues from gifts, foundations, interest income, and sales of services.
Source: HEGIS

This does not mean, however, that the institutions which enroll vocational students do not receive any public subsidy. Two-year public schools, which account for 80 percent of all vocational enrollments, received over $1 billion in direct revenues from federal sources in 1986-87, and over $7.6 billion in direct revenues from state and local sources. Thus, postsecondary vocational education is publicly subsidized, although proportionately much more from state and local sources than from federal sources.

[76] Total direct revenues represent the monies flowing directly to the institutions from various sources. Of the $103 billion received by postsecondary institutions in 1986-87, about one-third, or $33 billion came from students in the form of tuition and fees. This is substantially less then the $80 billion in total resources available to students enrolled in Fall 1986, but then total resources available to students also must cover living expenses and other non-school-related costs. The data presented in Table VII.1 show only revenues to institutions.

Federal Financial Aid Provides Access to Vocational Education

Although most federal financial aid and most direct federal funding for postsecondary education go to the four-year schools, federal aid policy does increase the accessibility of postsecondary vocational education. Federal vocational education policy is designed to promote access to vocational education for economically and educationally disadvantaged students, handicapped students, single parents or homemakers, adults in need of training or retraining, and students who are pursuing nontraditional occupations. The data in NPSAS and HS&B do not allow a comprehensive assessment of the access to postsecondary vocational education for all of these types of students, but they do enable us to conclude that federal policy objectives with respect to increasing access for several of these groups are being met, at least in terms of aggregate enrollments.

Vocational students are more likely to be women than men, and they are disproportionately black and Hispanic. Vocational students also tend to be older, and they are more likely than academic students to be financially independent. Vocational students are also more likely to be from lower income families than from higher income families.

Hence, postsecondary vocational education clearly serves economically disadvantaged students (students from lower income families) and adults in need of training or retraining (independent, older students). Students do not appear to be enrolling in non-traditional occupations, however. Given the relatively small amount of federal funding that goes directly to postsecondary vocational institutions through the Perkins Act, one must conclude it is the enrollment decisions of individual students that has had the largest impact on the achievement of these federal vocational policy objectives.

Most Postsecondary Vocational Education Students Enrolled in the Relatively Inexpensive Institutions

Postsecondary vocational students enrolled in two-year public and two-year private institutions, public voc-tech institutions, and proprietary institutions. Most of these students—78 percent—were enrolled in two-year public institutions, 17 percent were enrolled in proprietary institutions, about 3 percent each in public voc-tech schools and two-year private institutions.

This pattern of enrollment means that most vocational students were enrolled in relatively inexpensive schools. The average costs of enrollment for one year in the two-year public schools was less than $4,000 in 1986-87, and the average program cost in the public voc-tech schools was about $2,500 in 1986-87. The average cost of attendance faced by students enrolled in the private two-year and proprietary schools was between $6,000 and $7,000.

Even though most postsecondary vocational students were enrolled in relatively low cost institutions, about 20 percent of them were enrolled in the high cost proprietary and two-year private schools. Yet most of these students are drawn from families with annual incomes of less than $23,000, and other research has shown that the enrollment decisions of low-income students are particularly sensitive to tuition and fees. Why, then, are they enrolling in these more expensive schools?

There are two reasons why low-income students might choose the more expensive schools, and particularly the proprietary schools. The first is that the direct costs of attendance, tuition and fees, room and board, and other miscellaneous costs, are often just a small portion of the real costs of attendance. The greater costs are the opportunity costs of foregone earnings. Many proprietary programs are relatively short in duration, so students are buying a concentrated program that provides them with the skills to get out and get a job relatively quickly. The up-front costs of enrollment are high, but the opportunity costs for short-term programs are relatively low, even in comparison with two-year programs in a public institution. In addition, financial aid tends to be readily available.

Most of the Direct Costs to Aid Recipients of Vocational Education Were Covered by Financial Aid, and Vocational Students Enrolled in the More Expensive Institutions Were More Likely to Receive Aid

Postsecondary vocational students who received financial aid had a large fraction of their total costs covered, regardless of the type of institution they chose to attend. Among aid recipients, those in the public voc-tech schools had an average of 97 percent of their costs covered, while those enrolled in proprietary institutions or in the public two-year schools had about 80 percent of their costs covered by financial aid. Almost three-quarters of the costs faced by aid recipients enrolled in the two-year private schools were covered by financial aid.

The probability of getting financial aid was much higher in the proprietary and two-year private schools than in the two-year public and public voc-tech schools. Over 80 percent of the students enrolled in the proprietary schools received financial aid, as did two-thirds of the

vocational students in the two-year private institutions. In contrast, only half of the students enrolled in the voc-tech schools received aid, and only 30 percent of the vocational students in the two-year public schools received financial aid. Given the high probability of receiving financial aid in the private vocational schools, students, even those whose enrollment decisions are sensitive to increases tuition and fees, have incentives to attend the more expensive schools. This particularly true at the proprietary schools, many of which also offer a relatively short-term program. Taking into account only the average direct total costs, the probability of receiving financial aid, and the average fraction of costs covered by aid, the expected average costs of attendance are actually highest at the two-year schools at over $3,000, lowest at the public voc-tech schools at $1,239 (Table VII.2). The expected costs of attending a proprietary school are in the middle, at $2,257.[77] Students who do not apply for financial aid face expected costs equal to the average nominal costs of attendance.

Table VII.2
Expected Costs of Attendance at the Different Types of Vocational Schools

	Type of Institution			
	2-Year Private	2-Year Public	Public Voc-	Prop-rietary
Nominal Costs	$6,148	$4,076	$2,501	$6,881
Expected Costs	$3,192	$3,098	$1,239	$2,257

The way the financial aid system subsidizes vocational education may actually create incentives for students to attend the more expensive proprietary schools, because their expected costs are lower than they would be at the two-year public schools. This may explain why the

[77] The "expected cost" of attendance is what the student would expect to pay given the direct costs of tuition and fees, room and board, and miscellaneous costs adjusted by the probability of receiving aid and and the average amount of aid the student can expect to receive. Thus, a student enrolling in a private school faces expected costs that are substantially lower than the nominal cost, because the probability of getting financial aid is high and the average amount of aid is large. In other words, the availability of financial aid alters the consumption decision because students do not expect to absorb all of the nominal costs. Mathematically, the expected cost calculation is Px (1-A)C + (1-P)C, where
P = the probability of receiving aid;
A = the percentage of costs covered by aid; and
C = the average costs of attendance.

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proprietary sector expanded rapidly over the period 1980 to 1986, a time when total enrollments in postsecondary education were declining.[78]

Despite these incentives, more vocational students attend the two-year public schools than any other type of vocational institution. In part this is explained by the size of the sector: most postsecondary students live relatively near a community college. Furthermore, the community colleges are flexible institutions which allow part-time enrollment and which entail relatively low up-front costs.

The Types of Students Enrolled in the Two-Year Public Schools Were Less Likely Than Students Enrolled in the Other Institutions to Receive Financial Aid

The reason that the two-year public schools have a higher expected cost than the proprietary schools is because of the relatively low probability of receiving financial aid in these institutions. Two characteristics that were associated with a lower probability of receiving financial aid were prevalent among the students enrolled in the two-year public schools. First, over 60 percent of students enrolled in these schools were enrolled part-time, and part-time students were considerably less likely to receive financial aid than full-time students. A majority of students in all of the other types of institutions were enrolled full-time. Second, two-year public school students were more likely than students in the other institutions to have no clear degree objective, and lack of degree objective was also associated with a reduced probability of receiving financial aid.

However, while these factors do explain some of the differences in the probabilities of receiving financial aid at the different schools, the regression model presented in Table IV.6 showed that students in the two-year public schools were about 25 percent less likely to receive aid than proprietary students, even when costs, income, enrollment status, degree objective, and several other variables were controlled. There are a number of reasons why students at two-year public schools might be less likely to have received financial aid. The most obvious is that these schools are relatively inexpensive in terms of tuition and fees, the major direct costs. Consequently, students may have decided that they could absorb these costs into their normal budgets and concluded that they did not need financial aid. Another possibility is that students who enroll in public schools generally, and in public two-year and voc-tech schools in particular, are not as well informed about the availability of aid as are students in other types of institutions. Furthermore, there is some evidence that the financial aid offices at these schools may be less aggressive in obtaining aid or less well-staffed than the aid offices in private

[78] U.S. Department of the Census, Statistical Abstract of the United States, 1988, Table 193.

institutions, thus limiting the total amount of financial aid available at the school or restricting the availability of financial aid counseling. Conversely, counseling may contribute to the difference: several financial aid officers in the California Community Colleges said that they sometimes discourage two-year college students—who tend to come from low-income backgrounds and whose earnings potentials are relatively modest unless they continue their education beyond a two-year program—from assuming loans because default rates are high among their students. Yet another reason that students at the public two-year and voc-tech schools are less likely to receive aid is that these schools do not have endowments and scholarship funds, sources of aid that are more common in the four-year schools. Finally, the formulas for distributing campus-based aid, which are based on the school's history of participation in these programs and on the need of the students enrolled, may effectively limit the availability of these funds at the public two-year and voc-tech schools. Historically, they have had less access to them.

Vocational Students Were Especially Dependent on Federal Financial Aid

Students who received any financial aid at proprietary schools in particular, and to some extent at two-year public schools, were very dependent on federal sources of financial aid; this dependence means that these students would be disproportionately affected by changes in federal aid policy. The reliance on federal aid has some important implications because of the changing composition of the federal aid pie. Grants as a proportion of the total amount of federal aid have declined while loans have proportionately increased. This means that students at two-year public and proprietary schools, primarily vocational students, are increasingly reliant on loans as the means of financing their postsecondary education.

Vocational Students Were Disproportionately Dependent on Loans

Students enrolled in the vocational and two-year public institutions were more dependent on loans than on grant aid. The opposite was true in the four-year private schools, while students in the two-year private and four-year public schools are equally dependent on loans as on grants. This problem of loan dependence is particularly serious at the proprietary schools, where students not only depend to a great extent on loans, but where they are also incurring a large loan debts because of the high costs of attending these schools.

The reliance of proprietary and public voc-tech students on loans is a disturbing finding, particularly in light of evidence from other studies regarding income attainment and student loan defaults. For example, students who default on student loans have been shown to have the

following characteristics: they tend to have relatively small loan balances, they are first year students, they tend to be younger students, they more frequently come from low-income families, they tend to have lower GPAs, and they were more likely to have attended trade and technical schools or community colleges than universities and graduate schools.[79] Furthermore, students who defaulted on their student loans were less likely to have completed their postsecondary program than students who completed their program, and vocational students tend to drop out at high rates.

Table VII.3 shows the dropout rates for students enrolled in different types of institutions. Within four years of high school graduation, 42 percent of the students who had entered a two-year public postsecondary institution had dropped out. This is comparable to the rates at public voc-tech schools (47 percent), and private two-year schools (42 percent). In contrast, less than 20 percent of students entering a four-year college had dropped out within four years of finishing high school.[80]

Table VII.3
Dropout Rates of Postsecondary Students Four Years After High School Graduation

	Type of Institution			
	2-Year Private*	2-Year Public	Public Voc-	4-Year Colleges
Dropout Rate	42%	42%	47%	19%

*Includes proprietary institutions
Source: HS&B 1980 Seniors

[79] Cited in Kevin S. Gray, "Can Student Loan Default be Forecast Accurately?," *Journal of Student Financial Aid*, Vol. 15, No. 1, Winter 1985, and McCormick, McCormick, Joe L., "The Default Rate Factor: Who is Really at Fault?," *Journal of Student Financial Aid*, Vol. 17, No. 1, Winter 1987; p. 32.*Op. cit.* See also Hansen, W. Lee, and Marilyn S. Rhodes, *Student Debt Crisis: Are Students Incurring Excessive Debt?*, Wisconsin Center for Education Research, University of Wisconsin, October 1985; p. 18.

[80] W. Norton Grubb, Access, Achievement, Completion, and "Milling Around" in Postsecondary Vocational Education, a draft report prepared for National Assessment of Vocational Education, (Berkeley, CA: MPR Associates, Inc., June 1988), 13. Data derived from Figure 1.

Receipt of Financial Aid Appears to be Related to Better Persistence and Higher Rates of Completion in Postsecondary Vocational Education

Vocational students who received financial aid appear to have persisted in postsecondary education and to have completed degrees at higher rates than vocational students who did not receive financial aid. The data are not conclusive on this point, but these findings are consistent with other research on these issues. This must be considered an encouraging finding, since completion is associated with lower rates of student loan default and higher wages over the long term.[81] However, there is no way to distinguish the direction of causation: it is not clear whether students who receive financial aid are therefore more likely to persist, or whether students who are most likely to persist are also more likely to try and obtain financial aid.

The Financial Aid System Does Not Encourage Enrollment in Technologically Advanced Occupations

Financial aid, and particularly financial aid from federal sources, increases access to vocational education. Furthermore, financial aid to vocational education students appears to be related to better persistence and higher rates of completion in postsecondary vocational programs. Thus, the financial aid system succeeds in achieving some of the policy goals that are identified in federal vocational education legislation.

However, there is a second broad goal identified in federal vocational legislation that is less clearly obtained through the financial aid system: program improvement and the maintenance of an adequately trained labor force. While financial aid does increase access to postsecondary vocational education by making available the financial resources students need to attend a postsecondary institution, the aid system does not necessarily encourage enrollment in technologically advanced occupations. The decision about where to enroll and what to study is left up to students. The aid system is occupationally neutral. The system for awarding grants, loans, and subsidized work to students need not be neutral—for example, grants could be targeted to students who enroll in fields that are perceived to be in the nation's long-term interest such as manufacturing techniques using robotics—but the data presented in this report does not indicate that aid is targeted in any way to students enrolled in particular vocational

[81] Data from the National Longitudinal Study of the high school class of 1972 show that higher levels of educational achievement are associated with higher wage rates, although this relationship is more pronounced in professional, technical, administrative, managerial, and service occupations than in the crafts, operatives, and laborer occupations. For more on this issue, see MPR Associates, Inc., *A Descriptive Summary of 1972 High School Seniors: Fourteen Years Later*, a report prepared for the National Center for Education Statistics, U.S. Department of Education (Washington, D.C., August 1988), Chapter 2.

programs. Thus, the incentives offered by the financial aid system to the suppliers of vocational education to produce technologically current programs are offered through the purchase decision of the students: if students, armed with the financial aid they need to purchase modern training, demand such training, the suppliers will provide it.

Do students have the information they need to perceive opportunities correctly and to enroll in programs that will give them the skills they need to participate in the modern, information-based economy? Are vocational students getting the training they need to meet the changing needs of employers? These are questions that cannot be answered with the information presented in this report. These are, therefore, issues for further research. We can conclude that the financial aid system as it is currently structured does not necessarily encourage (or discourage) enrollment in technologically advanced occupations, and this may be a good reason to alter the way in which the financial aid system serves postsecondary vocational education students.

APPENDICES

Appendix 1: Description of Federal Financial Aid Programs

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APPENDIX 1

DESCRIPTION OF FEDERAL FINANCIAL AID PROGRAMS

The federal government is the largest source of student financial aid, accounting for about two-thirds of the total student aid awarded to undergraduates in 1986-87. Most of this aid came from five generally available financial aid programs: Pell Grants, Guaranteed Student Loans, National Direct Student Loans (now Perkins Loans), Supplemental Educational Opportunity Grants, and College Work-Study. Many federal agencies, such as the Agriculture and Defense Departments or the National Science Foundation, also operate student aid programs, but most of these are relatively small.

The five major federal aid programs were established and are governed by Title IV of the Higher Education Act of 1965, as amended. This Act was most recently reauthorized in 1986. All of these financial aid programs are need-based, and provide financial assistance to students who could not otherwise afford to attend their chosen college, university, or other postsecondary institution. The two largest programs, Pell Grants and Guaranteed Student Loans, are available to eligible students regardless of the particular institution they attend. The other three programs, NDSL, SEOG, and CWS, are campus-based: aid is first distributed to campuses through formulas that take into consideration past participation in these programs and the aggregate level of need of the students enrolled, and the campuses then make awards to students based on explicit criteria that the campus establishes within federally mandated guidelines. Following are descriptions of these five programs.[1]

To receive aid from any of these programs, the student must meet the following criteria. First, the student must be enrolled in an eligible institution or program. Second, the student must be able to document financial need. Third, the student must meet the specified enrollment requirements. To receive aid under the Pell Grant and NDSL programs, the student must be enrolled at least half-time for the purpose of obtaining a degree or certificate. The student must also be enrolled at least half-time to receive aid under the GSL (or PLUS) program, but need not be working toward a degree or certificate. Under certain circumstances, students who attend less than half-time may be eligible to receive aid from the CWS or SEOG programs.

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[1] These descriptions were taken from the *Program Book: A Summary of 1984-85 Statistics About Office of Student Financial Assistance Programs* (Washington, D.C.: U.S. Department of Education, 1986). In several cases we updated the descriptions to reflect program practice in 1986-87.

Pell Grants. The Pell Grant program provides grants to undergraduate students who need financial assistance to meet the costs of attending the postsecondary institution of their choice. The Pell Grant is often the first source of financial aid incorporated into the student's financial aid package, thus providing a "foundation" of financial aid. Aid from other federal, state, and private sources is generally added to this foundation.

Students must apply directly to the Department of Education for Pell Grants. The Department uses a standard formula to evaluate the information that the student provides on his or her application. This formula is revised and annually approved by Congress. The amount of the grant depends on the student's and the student's family's financial resources, the student's enrollment status, and the cost of attending the school chosen by the student. The maximum grant available through the Pell program in 1986-87 was $2,100 per academic year.

Guaranteed Student Loans. The GSL program provides loans to undergraduate and professional students to help them meet the costs of postsecondary education. The federal government subsidizes the interest rate to the student over the life of the loan, and fully absorbs the costs of interest on the principal while the student is in school or in another approved situation for deferring payment on the loan. Loan repayment can be deferred while the student enrolled full-time in school, or for up to three years while the borrower is in the Peace Corps or the armed forces. The federal government guarantees repayment of principal and interest to the lender, thereby providing the collateral that the student may not be able to provide.[2]

Students apply directly to the lender for a GSL, and the loan is a private lender-borrower agreement between the lending institution and the student. However, a financial aid officer must first certify that the student is eligible for need-based aid before a student can qualify for the loan. Furthermore, the aid officer specifies the amount of loan aid that the student can receive, since the loan together with other financial resources cannot exceed the student's need. The student borrower is liable for the principal and interest payments on the loan, but schools with very high default rates can be excluded from subsequent participation in the GSL program. Undergraduate students could borrow as much as $2,500 per school year in 1986-87, up to a cumulative maximum of $12,500.

A program related to the GSL program is the PLUS program. The PLUS program provides loans to independent undergraduates, to graduate and professional students, and to

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[2] In addition to guaranteeing and subsidizing interest on the loan, the federal government also pays a special quarterly allowance to lenders based on the outstanding principal balance of their GSL loans. This allowance is determined by a formula that assures most lenders a total variable yield equal to the average of the 91-day T-bill rates plus 3.5 percent. This is also true of loans made through the PLUS program.

parents of dependent undergraduates. These loans, like the GSL, are are designed to assist students in paying for their postsecondary education. However, the federal government does not subsidize the PLUS interest rate, and repayment starts 60 days after the loan is made unless the borrower meets deferment conditions. The federal government does guarantee repayment of the principal and interest to the lender.

National Direct Student Loan. The NDSL program provides low-interest loans to students to assist them in meeting the costs of their postsecondary education. The NDSL program is campus-based, so students apply directly to the institutions for these loans. NDSL funds are a combination of capital from the federal government and the institution, and in general, the institutions contribute one-tenth of the program funds at the school. Students are not charged interest on these loans until after completing their postsecondary schooling, and students can defer repayment of the loan while they are enrolled at least half-time in a postsecondary institution. Students can also defer repayment for up to three years while they are in the military, the Peace Corps, or in an ACTION program, or in other organizations approved by the Secretary of Education. In 1986-87 undergraduate students in their first two years of a bachelor's degree program were eligible to borrow up to $3,000; undergraduate students who had completed two years of a bachelor's degree program and had attained third-year status were eligible to borrow up to $6,000. However, the $6,000 maximum was a cumulative amount for all borrowing under the NDSL program.

Supplemental Educational Opportunity Grant. The SEOG program provides grants to undergraduates students to assist them in meeting the costs of their postsecondary education. The SEOG is a campus-based program, so students apply directly to their schools to obtain this grant. The SEOG program is funded entirely by the federal government. Under the SEOG program, a student was eligible to receive up to $2,000 per academic year in 1986-87, and the minimum grant was $200.

College Work-Study. The CWS program provides subsidized part-time employment for undergraduate and graduate and professional students who need financial assistance to meet the costs of postsecondary education. The school makes jobs available either on-campus, or assists students in getting jobs off-campus at federal, state, or local public agencies, or at private non-profit organizations. The CWS program is campus-based, so students apply directly to their school for CWS aid. Funding for the CWS program comes from federal sources and from the participating institutions. CWS funds from federal sources can be used to pay up to 80 percent of the student employee's wages, and at least 20 percent must come from the student's employer. There is no minimum or maximum amount of assistance that a student

can receive through the CWS program, although students cannot be employed for more than 20 hours per week when school is in session. Wages paid under the CWS program must be at least equal to the minimum wage.

APPENDIX 2
REGRESSION RESULTS: PROBABILITY OF RECEIVING FEDERAL FINANCIAL AID

Variable Name[3]	Parameter Estimate	Standard Error	t-value	Mean
Federal Aid	(Dependent Variable)	–	–	0.35
Age	-.0065	.00041	-15.75	25.02
Male	.0002	.00459	0.04	0.45
(Female)	–	–	–	–
Native American	.0226	.02521	0.90	0.01
Asian	-.0522	.01352	-3.86	0.05
Black	.1008	.01156	8.72	0.09
White	-.0241	.00931	-2.59	0.78
(Hispanic)	–	–	–	–
Lives With Family	-.0838	.00734	-11.03	0.30
Lives Off Campus	-.0475	.00749	-6.35	0.49
(Lives in Campus-Owned)	–	–	–	–
Dependent	-.2782	.01261	-22.05	0.63
(Independent)	–	–	–	–
Public 4-Year	-.0461	.00881	-5.24	0.39
Private 2-Year	-.0014	.02130	-0.07	0.01
Public 2-Year	-.1483	.01048	-14.15	0.36
Public Voc-Tech	-.1050	.02729	-3.85	0.01
Proprietary	.1586	.01411	11.24	0.05
(Private 4-Year)	–	–	–	–
Hours Enrolled	.0159	.00053	29.82	11.39
Tuition and Fees	.00002	.000002	14.72	1,765.40
Student Income	-.000005	.00000002	-27.59	10,244.11
Parent Income <$11K	.4317	.00940	45.92	0.10
Parent Income $11K - $17K	.3906	.00976	40.00	0.08
Parent Income $17K - $23K	.3291	.00937	35.11	0.09
Parent Income $23K - $30K	.2532	.00883	28.67	0.10
Parent Income $30K - $50K	.1686	.00728	23.16	0.21
(Parent Income $50K+)	–	–	–	–
Parent Income, Missing	.1773	.00758	23.28	0.23

—Continued—

[3] Variable categories that were excluded from the regression are shown in parentheses. In order to incorporate qualitative variables into a regression framework, one of the categories must be excluded. Thus for a variable with n discrete categories, there will be n-1 categories in the regression. The coefficients, or parameter estimates, for the included categories are calculated in relation to the excluded category. Hence, the categories shown in parentheses were not directly estimated: the parameter estimate for these categories is incorporated in the intercept, and the parameter estimate for the included categories represent the effect of that characteristic in relation to what was already calculated in the intercept.

Regression Results: Probability of Receiving Federal Aid (Continued)

Variable Name	Parameter Estimate	Standard Error	t-value	Mean
Certificate	-.0401	.01007	-3.98	0.08
BA/BS	-.0312	.00764	-4.09	0.55
No Formal Degree	-.0963	.01120	-8.61	0.05
Other	-.0658	.00922	-7.14	0.10
(AA Degree)	–	–	–	–
Num. Dependents = 1	-.0131	.01671	-0.79	0.02
Num. Dependents = 2	-.0082	.01691	-0.49	0.02
Num. Dependents = 3 - 4	.0239	.01552	1.54	0.02
Num. Dependents = 5 - 9	.0409	.03101	1.32	0.01
Num. Dependents = Missing	.0337	.01279	2.64	0.64
(Num. Dependents = 0)	–	–	–	–
Intercept	.4509	.02214	20.37	1.00

* Excluded categories shown in parentheses.
Source: NPSAS

APPENDIX 3
CLASSIFICATION OF POSTSECONDARY COURSES

The following classification groups courses, described in the HS&B transcripts and NLS-72 transcripts by a six-digit CIP code, into ten vocational areas, eight academic areas, and remedial/avocational.

I. VOCATIONAL COURSES

1. Agriculture

   Agribusiness and agricultural production 010101 - 019999
   Agricultural sciences 020101 - 029999
   Renewable natural resources 030101 - 039999

2. Business and management

   2.1 Business management and finance

   Business and management 060101 - 069999, except insurance and risk management, (060801), marketing management and research (061401-061499), real estate (061701-061799), small business management (061801-061899) Arts management (500704)

   2.2 Business support

   Business and office, 070101 - 079999 except 070305 (business data programming) and 070306 (business systems analysis)

3. Marketing and distribution

   Marketing and distribution 080101 - 089999
   Insurance and risk management 060801
   Marketing management and research 061401 - 061499
   Real estate 061701 - 061799
   Small business management 061801 - 061899

4. Health

   4.1 Nursing

   Nursing 181101 - 181199
   Nursing-related services 170601 - 170699

   4.2 Other health

   Allied health 170101 - 179999 except 170601-170699
   Health sciences 180101 - 189999 except 181101 - 181199

5. Occupational home economics

Home economics 190101 - 199999
Vocational home economics 200101 - 200699
Personal services 120101 - 129999
Interior design 040501

6. Trades and industry

6.1 Construction trades 460101 - 469999

6.2 Mechanics and repairers 470101 - 479999

6.3 Precision production 480101 - 489999 plus industrial arts (210101 - 210199)

6.4 Transportation and material moving 490101 - 499999

7. Technical and engineering

7.1 Computer and information sciences 110101 - 119999 plus 070305 (business data programming) and 070306 (business systems analysis)

7.2 Engineering 140101 - 149999, 300301, 300601 (systems sciences)

7.3 Engineering technologies and other technologies

Engineering-related technologies 150101 - 159999
Science technologies 410101 - 419999
Communication technology 100101 - 100199

8. Education

Education 130101 - 139999
Library science 250101 -259999

9. Public service

Protective services 430101 - 439999
Public affairs 440101 - 440301, 440601 - 449999
Military science 280101 - 289999
Military technologies 290101 - 290199
Parks and recreation 310101 - 319999
Public administration 440401
Law 220101 - 220199

10. Communications

Communications, general and other 090101, 099999
Journalism 090401
Radio/television news broadcast and general 090601, 090701
Advertising 090201
Communications research 090301
Public relations 090501

II. ACADEMIC COURSES

1. Letters

    1.1 Literature 230101, 230201, 230301, 230701, 230801,

    1.2 Writing 230401, 230501, 231101

    1.3 Speech and linguistics 230601, 230901, 231010, 239999

2. Foreign languages

    7.1 Spanish 160905

    7.2 French 160901

    7.3 German 160501

    7.4 Other languages 160101 - 169999 except 160901, 160905, 160501

3. Humanities

    3.1 History 450801

    3.2 Other humanities

        Philosophy 380101 - 389999
        Theology 390101 - 399999
        Humanities and social sciences 300401
        Peace studies 300501

4. Sciences

    4.1 Biological and life sciences 260101 - 269999, 300101

    4.2 Physics 400201,400301, 400401, 400801-400899, 400901

    4.3 Chemistry 400501- 400599

    4.4 Other sciences 400101, 400401, 400601 - 400799, 409999

5. Mathematics 270101 - 279999

6. Social sciences

6.1 Psychology 420101 - 429999, 300201

6.2 Economics 450601

6.3 Political science 451001, 450901 (international relations), 050101 - 050199 (area studies)

6.4 Sociology 451101, 450401 (criminology), 4505011 (demography), 451201 (urban studies)

6.5 Other social science

General and other 450101, 459999
Anthropology 450201
Archeology 450301
Geography 450701
Public affairs 440501
Ethnic studies 050201 - 059999
Women's studies 300701

7. Fine arts

Visual and performing arts 500101-500999 except 500704
Architecture and environmental design 040101 - 049999 except 040501

8. Liberal studies/general studies 240101, 240199, 309999

III. REMEDIAL/AVOCATIONAL COURSES

Basic skills 320101 - 329999
Citizenship 330101 - 339999
Health-related 340101 - 349999
Interpersonal skills 350101 - 3539999
Leisure and recreational activities 360101 - 369999
Personal awareness 370101 - 370199

APPENDIX 4

TECHNICAL NOTES

Most of the variables that were used to generate the estimates of financial aid were composite variables created by the National Center for Education Statistics that were stored in the NPSAS or HS&B data files. Several of the variables, however, were created expressly for this report. This technical appendix identifies the variables that were taken from the data files and describes the variables that we constructed.

All of the financial aid and enrollment estimates were calculated using the weighted student data available in the NPSAS and HS&B files. However, the complex sample design, while generating unbiased estimates of the population of undergraduates, produces standard errors that are too small if one uses a simple SAS routine. To generate the standard errors used to calculate statistical significance, we used a SAS procedure developed by C. Dennis Carroll at the National Center for Education Statistics called CDCTAB. This procedure uses Taylor estimation techniques generate standard errors that are adjusted to take into consideration the design effects of a non-random, complex sample.

NPSAS

The NPSAS data set contains data on both undergraduate and graduate students enrolled in Fall 1986. In order to restrict the sample to undergraduates only, we used the variable STUDENT LEVEL, which was created by NCES and stored on the NPSAS tape as a composite variable.

To specify institutional types, we used the institutional type (less-than two-year, two- to three-year, four-year not PhD, and four-year PhD granting) and the institutional control (public, private, proprietary) variables to categorize institutions. Proprietary schools, regardless of the length of the program offered, were classified as proprietary. Less-than two-year public schools were classified as vocational-technical institutions, and two- to three-year public institutions were classified as two-year public schools. Less-than two-year and two- to three-year private schools were aggregated as two-year private schools, since there were too few institutions in the less-than two-year category to produce reliable estimates. All four-year schools (except proprietary) were included in the four-year institution category, although we distinguished between public and private institutions.

The financial aid system is very complex, in part because students can get financial aid from many different sources at the same time. The aid estimates presented in this report are based on aid awarded to students, and the amount of aid each student was awarded had to summed over all possible programs in order to ensure that all aid resources were included in the calculations. Rather than construct the aid composites ourselves, we relied on variables already constructed by NCES.[4] However, the file we used was an interim file, so many of the composite variables had not been cleaned to correct out-of-range values. Out-of-range values were corrected by setting them to the value of 99th percentile; this simple adjustment corrected the worst cases. Table A4.1 shows the aid variables that were used to estimate students' financial aid resources.

Table A4.1
NPSAS Aid Variables Used to Calculate the Aid Statistics Presented in the Report

Variable	SAS File Name
Amount of all Aid	AID_AMT
Amount of federal aid	FED_AMT
Amount of state aid	STAT_AMT
Amount of institutional aid	INST_AMT
Amount of other aid	OTHS_AMT
Amount of grant aid	GRAN_AMT
Amount of loan aid	LOAN_AMT
Amount of work-study aid	WORK_AMT
Amount of federal grants	FGRT_AMT
Amount of state grants	SGRT_AMT
Amount of institutional grants	IGRT_AMT
Amount of other grants	OGRT_AMT
Amount of federal loans	FLOANAMT
Amount of state loans	SLOANAMT
Amount of institutional loans	ILOANAMT
Amount of federal work-study	FWORKAMT
Amount of state work-study	SWORKAMT
Amount of Pell Grants	Q35A1AMT
Amount of GSL aid	GSL_AMT
Amount of SEOG aid	Q35A2AMT
Amount of NDSL aid	Q35A3AMT
Amount of CWS aid	Q35A4AMT
Parent/Family Contributions	S56, S59-S61
Student/Spouse Contrib.	S54, S55

[4] Complete descriptions and coding instruction for these variables are available in the *National Postsecondary Student Aid Study Data File User's Manual: Student Survey Data File, Preliminary Data File*, prepared by Westat, Inc., (Washington, D.C.: National Center for Education Statistics, May 1988), Appendix F.

We did not use the aid flags to calculate the perentage of students receiving aid. Instead, the percentage of students receiving aid was derived by dividing all students (with particular characteristics) who had a positive amount for the specified aid variable by the total sample of students (with similar characteristics). This strategy enabled us to avoid inconsistencies between the aid flag and the aid amount variables.

The cost of postsecondary education was also calculated using variables that had been constructed by NCES. The cost variables are shown in Table A4.2. Total costs were institutionally determined, and only applied to those students who received financial aid. Since aided students appear to have attended more expensive institutions than non-aided students, these estimated costs may be somewhat high as an estimate of costs faced by all students. However, the institutionally determined costs were more accurate and consistent than were student determined costs, so we used the institutional variable only.

Table A4.2
NPSAS Aid Variables Used to Calculate the Cost Statistics Presented in the Report

Variable	SAS File Name
Tuition and Fees	TUITFEES
Total Cost*	INS_COST

* Institutionally determined costs.

Table A4.3 shows the variables that were taken straight from the NPSAS file for use as row variables. These variables were used to classify students into groups with specific characteristics so that we could assess how aid differed with respect to these different groups.

Table A4.3
NPSAS Composite Variables Used as Classification Variables in the Report

Variable	SAS File Name
Sex	D_SEX
Race/Ethnicity	RACE
Age	AGECAT
Dependency Status	DEPSTAT
Parent Income	AGICATD*
Student Residence	RESIDENC
Year in School	S3
Enrollment Status	Q22

In addition to these classification variables that were available in the NPSAS preliminary file, we constructed or modified several classification variables to meet our categorization needs. In general, these variables were merely recoded from variables with discrete categories that were available in the file, although several were constructed from continuous variables.

Table A4.4
Constructed or Modified Classification Variables Used in the Report

Variable	SAS File Name (code)
Student Income (continuous)	S87A85
LT $10K	
$10K-$19,999	
$20K-29,999	
$30K-50K	
$50K+	
Working for Pay	S1A, S46
Fall	(S1A=1, S46≠1)
Spring	(S1A≠1, S46=1)
Both	(S1A=1, S46=1)

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Table A4.4
Constructed or Modified Classification Variables Used in the Report (continued)

Variable	SAS File Name (code)
Cost of Institution[5]	INS_COST
High	(Top 1/3 by type)
Middle	(Middle 1/3 by type)
Low	(low 1/3 by type)
Parent Education	S99_1, S99_2
LT HS	(1)
HS Only	(2, 3)
Some College	(4 - 8)
4 Years College	(9)
Advanced Degree	(10 - 12)
HS Diploma Type	S83A
Regular Diploma	(1, 8)
GED/Equivalency	(2)
Certificate	(3)
Not a Graduate	(4)
Degree Objective	S4
Certificate/Award	(1, 2)
Associate Degree	(3)
Bachelor's Degree	(4)
No Formal Award	(10)
Other	(5 - 9, 11)
Vocational Specialty	Q20A1CDE, Q21FCDE (CIP Codes)
Agriculture	(01, 02, 03)
Business/ Marketing	(06, 07, 08, 220101, 220103)
Health	(17, 18)
Occupational Home Econ.	(12, 19, 20)
Trades and Industry	(46, 47, 48, 49)
Technical and Engineering	(10, 11, 14, 15, 41)
Communications	(09)
Education/Public Service	(13, 25, 28, 29, 31, 43, 44)
Credit Hours Enrolled (continuous)	Q21C_1, Q21B
1-6	
7-12	
13-18	
19+	

[5] This variable was constructed by ranking schools within each institutional type, and dividing them into thirds based on these rankings.

The "Credit Hours Enrolled" variable was a composite of both credit hours and clock hours. To adjust clock hours to approximate credit hours, we took the ratio of average credit hours to average clock hours by type of institution, and then multiplied this ratio times the number of clock hours completed by each clock hour student. Clock hours were thus adjusted to approximate credit hours, although this technique did not work well with the public vocational/technical schools. Since so many students in the public voc-tech schools were enrolled in clock hour programs, the distribution of students by "Credit Hours Enrolled" was on the high end, giving the impression that these students were taking far more credits on average than students in the other schools. This merely reflects the fact that students in these vocational programs tend to be enrolled for many hours in a week because the course work involves hands-on training and lab work.

HS&B

The analysis of High School and Beyond used a financial aid file prepared by the Center for Education Statistics.[6] This file combined many variables from the student surveys (base-year, first and second follow-ups) with financial aid information collected directly from postsecondary institutions. Two samples were drawn for the analysis using these data. Statistics calculated for the academic year 1980-81 included all students who had a financial aid record for that year. For the analysis of persistence and financial aid, students were only included if, for each institution in the financial aid file, there was complete and matching information in the postsecondary transcript file. Of the 7,431 students included in the postsecondary financial aid file, only 5,626 (or 76 percent) satisfied this requirement.

The anaysis file provided by the CES contained all of the annual composite student aid variables that were used in this analysis. The variables used in this study are listed in Table A4.5. Each variable has the year of the financial aid award embeded in the SAS file name. Variables begining with Y1 were awarded in the 1980-81 academic year, a Y2 indicates the award was made in the 1981-82 academic year, and so on. In addition to the yearly composites, the MPR Associates staff prepared several variables which described the cummulative receipt of financial aid between 1980-81 and 1983-84. These new variables were created by summing accross each of the years in the analysis file. For example, the total

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[6] C. Dennis Carroll, *High School and Beyond Senior Cohort Analysis File: Student Financial Aid, 1980-84*, Longitudinal Studies Branch, Center for Education Statistics, U.S. Department of Education, December 1986.

amount of Pell grants awarded was calculated by summing the amounts received in the 1980-81, 1981-82, 1982-83, and 1983-84 academic years.

Table A4.5
High School and Beyond Variables Used to Calculate the Aid Statistics Presented in the Report

SAS Filename	Variable
Y#COLLG	College Grant Amount
Y#COLLN	College Loan Amount
Y#CWS	College Work Study Amount
Y#GSL	Guarenteed Student Loan Amount
Y#NDSL	National Direct Student Loan Amount
Y#OTHG	Other Grants Amount
Y#OTHL	Other Loans Amount
Y#PELL	Pell Grants Amount
Y#SEOG	SEOG Grants Amount
Y#STGRT	State Grants Amount
Y#STLN	State Loans Amount
Y#TOTG	Total Grants Amount
Y#TOTL	Total Loans Amount

= 1 for AY 1980-81, 2 for AY 1981-82, 3 for AY 1982-83, and 4 for AY 1983-84

Three financial aid categories were designed to summarize students' financial aid patterns over the four years between 1980-81 and 1983-84. Students who never received any type of financial aid while they were enrolled were placed in the "never aided" category. Students who received financial aid, but not during each year they were enrolled were assinged to the "sometimes aided" category. "Always aided" included those students who received aid during each year they were enrolled in postsecondary education. Table A4.6 shows the weighted fraction of students who first entered each type of postsecondary institution with each financial aid pattern. The same table also indicates unweighted number of students in each category.

Table A4.6
Number of Students in Each Aid Category and the Percentage of Students in Each Category Based on the Type of Postsecondary Institution First Entered

	All Schools	4-Year Private	4-Year Public	2-Year Private	2-Year Public	Public Voc-Tech	Prop-rietary
Never Aided							
Percent	45.5%	19.7%	36.7%	37.6%	65.4%	72.9%	44.7%
Unwgt. N	1,938	161	543	23	1060	80	71
Sometimes Aided							
Percent	26.3	30.8	32.1	20.3	20.3	8.0	23.7
Unwgt. N	1,256	230	549	17	395	20	45
Always Aided							
Percent	28.1	49.5	31.0	42.1	14.3	19.1	31.6
Unwgt. N	1,574	437	659	37	336	25	80

Three variables were also prepared to describe students educational outcomes at the end of the 1983-84 school year. Students were classified as "completers" if, according to their transcripts, they fulfulled all graduation requirements and obtained some type of postsecondary degree. "Non-completers" included all students who had not received some type of degree or certificate. This category was futher divided according to the students enrollment status during the 1983-84 academic year. Students who were still in school during this year were classified as "non-completers, still in school." Students who were not enrolled during the last year recorded in the transcript and finacial aid files were considered either stop-outs or drop-outs and classified as "non-completers, out of school."

Table A4.7 shows the student characteristics that were taken from the student surveys and used as row variables. Except for enrollment status, all of the variables derived from CES's list of standard clasification variables.[7]

[7] Carl M. Schmitt, *High School and Beyond: Senior Classification Variable Set*, Longitudinal Studies Branch, Center for Education Statistics, U.S. Department of Education, September 1987. The enrollment status variable is found in the Student Financial Aid file.

Table A4.7
Row Variables for HS&B

Variable	SAS File Name
Sex	SEXCOMP
Race/Ethnicity	RACE
PSE Plans in 1980	PSE PLANS
Family Income in 1980	FAMINC2
Socioeconomic Status	SESQ
Parents' Highest Education	PAREDUC
Enrollment Status	FRESH

In addition to the standard set of row variables, several new row variables were devised specifically for this analysis. "Courses completed by 1984" was calculated by summing up the number of courses listed on the postsecondary transcripts with a passing grade. Students who completed 50 percent or more of their credits in vocational course work were classified as vocational students. A "vocational specialty" category was created by selecting the field where the student completed a plurality of their vocational coursework.